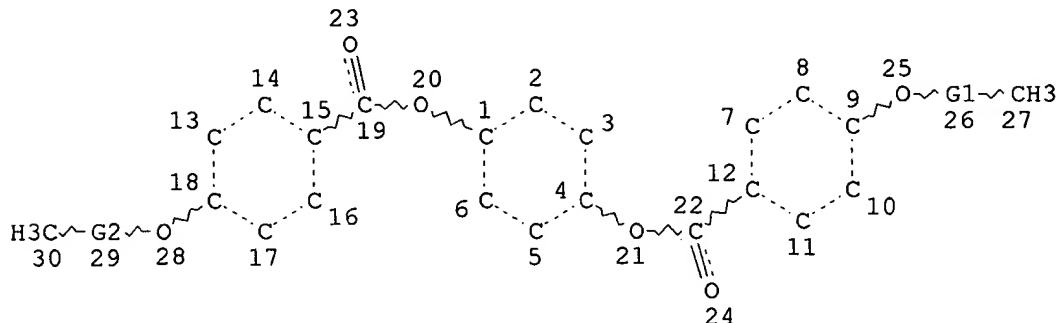


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FULL SCREEN SEARCH COMPLETED - 12677 TO ITERATE

100.0% PROCESSED 12677 ITERATIONS

535 ANSWERS

SEARCH TIME: 00.00.05

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COST IN U.S. DOLLARS

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TOTAL

FULL ESTIMATED COST

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FILE COVERS 1947 - 29 Nov 2001 VOL 135 ISS 24

FILE LAST UPDATED: 29 Nov 2001 (20011129/ED)

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STRUCTURE FILE UPDATES: 29 NOV 2001 HIGHEST RN 372477-76-4  
DICTIONARY FILE UPDATES: 29 NOV 2001 HIGHEST RN 372477-76-4

TSCA INFORMATION NOW CURRENT THROUGH July 7, 2001

Please note that search-term pricing does apply when  
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Calculated physical property data is now available. See HELP PROPERTIES  
for more information. See STNote 27, Searching Properties in the CAS  
Registry File, for complete details:  
<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

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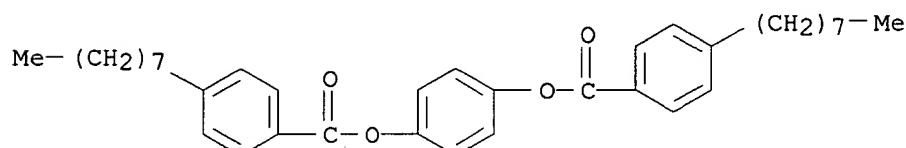
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     4-(hexyloxy)benzoate, 4-pentylphenyl 4-(octyloxy)benzoate and  
     1,4-phenylene bis[4-(octyloxy)benzoate] (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

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 CN [1,1'-Biphenyl]-4-carbonitrile, 4'-decyl-, mixt. contg. (9CI)  
 CN [1,1'-Biphenyl]-4-carbonitrile, 4'-dodecyl-, mixt. contg. (9CI)  
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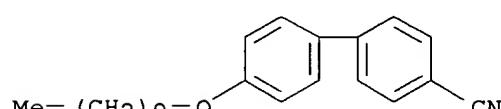
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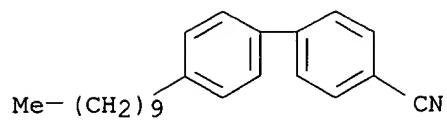
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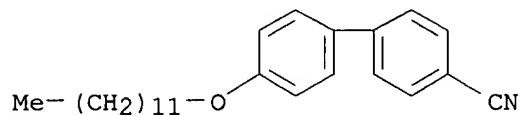
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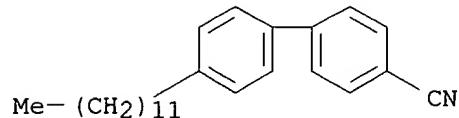
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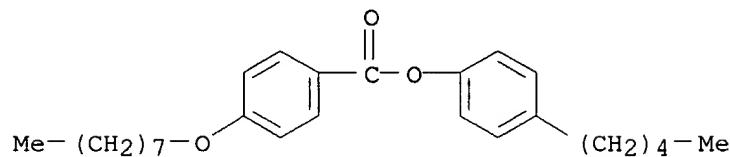
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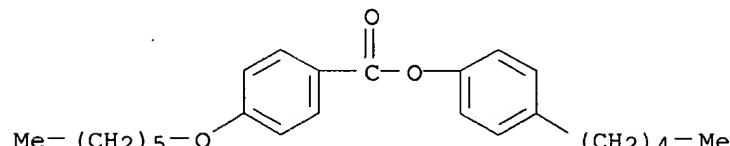
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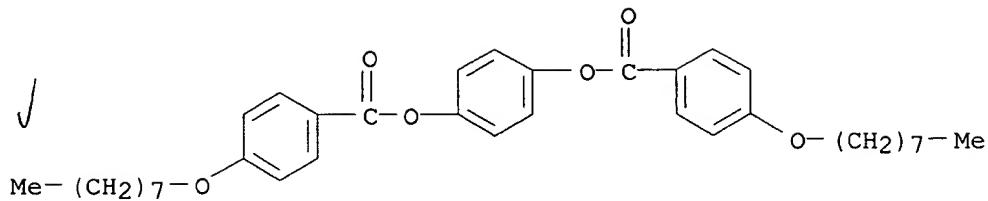
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CRN 38444-15-4  
CMF C24 H32 O3





2 REFERENCES IN FILE CA (1967 TO DATE)  
 2 REFERENCES IN FILE CAPLUS (1967 TO DATE)

## REFERENCE 1

AN 127:241045 CA  
 TI Polymeric material for liquid crystal/polymer composite film, liquid crystal/polymer composite film, record display medium, and use thereof  
 IN Saito, Wataru; Baba, Atsushi; Shindo, Tadafumi; Shimada, Naoki; Ozawa, Hidetoshi; Kinase, Yoshinori; Kajiyama, Tisato; Imamura, Yasuhiro; Kaiya, Norihiro; Goto, Yoshitaka  
 PA Dai Nippon Printing Co., Ltd., Japan  
 SO Eur. Pat. Appl., 37 pp.  
 CODEN: EPXXDW

DT Patent  
 LA English

## FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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	EP 790289	B1	20010905		
	R: DE, FR, GB				
	JP 09218398	A2	19970819	JP 1996-49445	19960213
	US 5851422	A	19981222	US 1997-797138	19970210

PRAI JP 1996-49445 19960213  
 AB A record display medium is provided which can offer a high display contrast and is less likely to cause a lowering of contrast or disappearance of display even in low temp. and high temp. regions. A polymeric material for a liq. crystal/polymer composite film comprising a liq. crystal present in a polymer matrix, a liq. crystal/polymer composite film using the material, and use of the record display medium are also provided. The polymeric material for a liq. crystal/polymer composite film comprising a liq. crystal present in a polymer matrix has a glass transition temp. of 150.degree. or above and is insol. in water.

## REFERENCE 2

AN 126:111120 CA  
 TI Smectic liquid crystal composition for display device  
 IN Baba, Atsushi; Saito, Wataru; Nishiyama, Isa; Yoshizawa, Atsushi  
 PA Dai Nippon Printing Co., Ltd., Japan; Japan Energy Corporation  
 SO Eur. Pat. Appl., 19 pp.  
 CODEN: EPXXDW

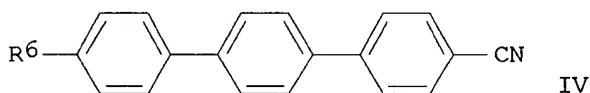
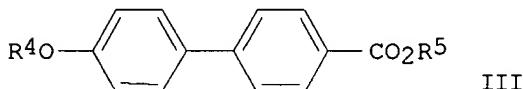
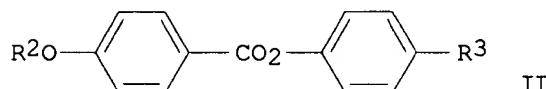
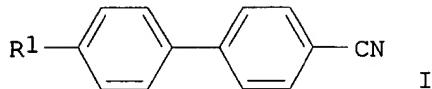
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JP 09040959	A2	19970210	JP 1996-49444	19960213
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CN 1141329	A	19970129	CN 1996-110015	19960518
PRAI JP 1995-144239		19950519		
JP 1996-49444		19960213		

GI



AB A smectic liq. crystal compn. is provided which can offer a high display contrast and is less likely to cause a lowering of contrast or disappearance of display even in low temp. and high temp. regions. The liq. crystal compn. comprises at least one compd. selected from the group consisting of compds. represented by the formula I wherein R1 represents an alkyl or alkoxy group having 8-18 carbon atoms and at least one compd. selected from the group consisting of compds. represented by the formulas II-IV wherein R2, R4-6 represent alkyl groups having 2-18 carbon atoms and R3 represents an alkyl or alkoxy group having 2-18 carbon atoms.

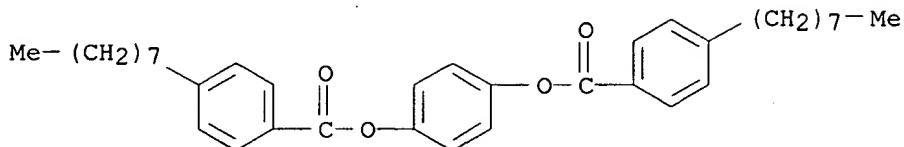
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L7 ANSWER 1 OF 12 REGISTRY COPYRIGHT 2001 ACS  
 RN 185951-90-0 REGISTRY  
 CN Benzoic acid, 4-octyl-, 1,4-phenylene ester, mixt. with  
 4'-decyl[1,1'-biphenyl]-4-carbonitrile, 4'-(decyloxy)[1,1'-biphenyl]-4-  
 carbonitrile, 4'-dodecyl[1,1'-biphenyl]-4-carbonitrile,  
 4'-(dodecyloxy)[1,1'-biphenyl]-4-carbonitrile, 4-pentylphenyl  
 4-(hexyloxy)benzoate, 4-pentylphenyl 4-(octyloxy)benzoate and  
 1,4-phenylene bis[4-(octyloxy)benzoate] (9CI) (CA INDEX NAME)  
 OTHER CA INDEX NAMES:  
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 CN Benzoic acid, 4-(octyloxy)-, 4-pentylphenyl ester, mixt. contg. (9CI)  
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SR CA  
LC STN Files: CA, CAPLUS, USPATFULL

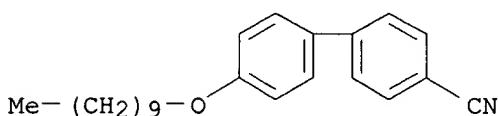
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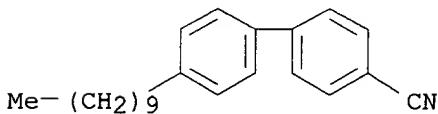
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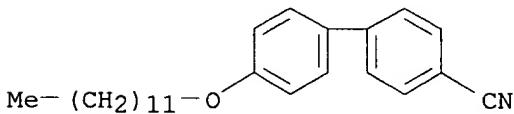
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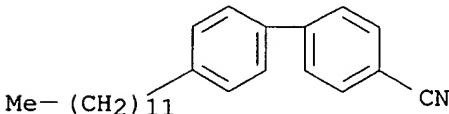
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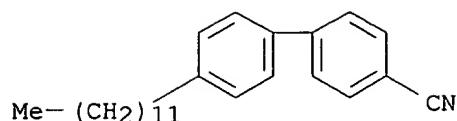
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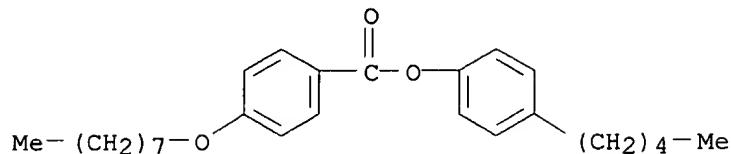




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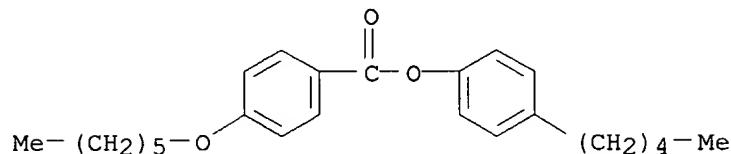
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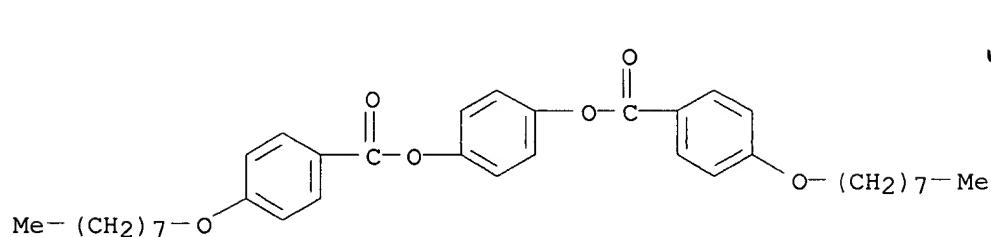
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2 REFERENCES IN FILE CA (1967 TO DATE)  
2 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1

AN 127:241045 CA

TI Polymeric material for liquid crystal/polymer composite film, liquid crystal/polymer composite film, record display medium, and use thereof

IN Saito, Wataru; Baba, Atsushi; Shindo, Tadafumi; Shimada, Naoki; Ozawa, Hidetoshi; Kinase, Yoshinori; Kajiyama, Tisato; Imamura, Yasuhiro; Kaiya, Norihiro; Goto, Yoshitaka

PA Dai Nippon Printing Co., Ltd., Japan

SO Eur. Pat. Appl., 37 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

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	JP 09218398	A2	19970819	JP 1996-49445	19960213
	US 5851422	A	19981222	US 1997-797138	19970210
PRAI	JP 1996-49445		19960213		

AB A record display medium is provided which can offer a high display contrast and is less likely to cause a lowering of contrast or disappearance of display even in low temp. and high temp. regions. A polymeric material for a liq. crystal/polymer composite film comprising a liq. crystal present in a polymer matrix, a liq. crystal/polymer composite film using the material, and use of the record display medium are also provided. The polymeric material for a liq. crystal/polymer composite film comprising a liq. crystal present in a polymer matrix has a glass transition temp. of 150.degree. or above and is insol. in water.

REFERENCE 2

AN 126:111120 CA

TI Smectic liquid crystal composition for display device

IN Baba, Atsushi; Saito, Wataru; Nishiyama, Isa; Yoshizawa, Atsushi

PA Dai Nippon Printing Co., Ltd., Japan; Japan Energy Corporation

SO Eur. Pat. Appl., 19 pp.

CODEN: EPXXDW

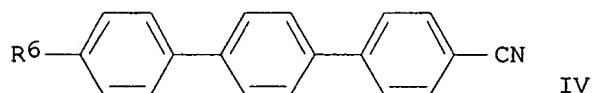
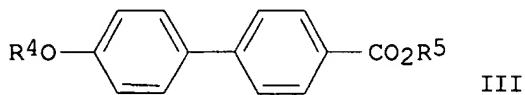
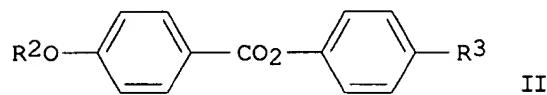
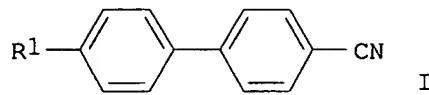
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	CN 1141329	A	19970129	CN 1996-110015	19960518
PRAI	JP 1995-144239		19950519		
	JP 1996-49444		19960213		

GI



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L7 ANSWER 2 OF 12 REGISTRY COPYRIGHT 2001 ACS

RN 154032-76-5 REGISTRY

CN Poly[oxy[2,5-bis[[4-(octyloxy)benzoyl]oxy]-1,4-phenylene]oxycarbonyl-1,4-phenyleneoxy(1,4-dioxo-1,4-butanediyl)oxy-1,4-phenylenecarbonyl] (9CI)  
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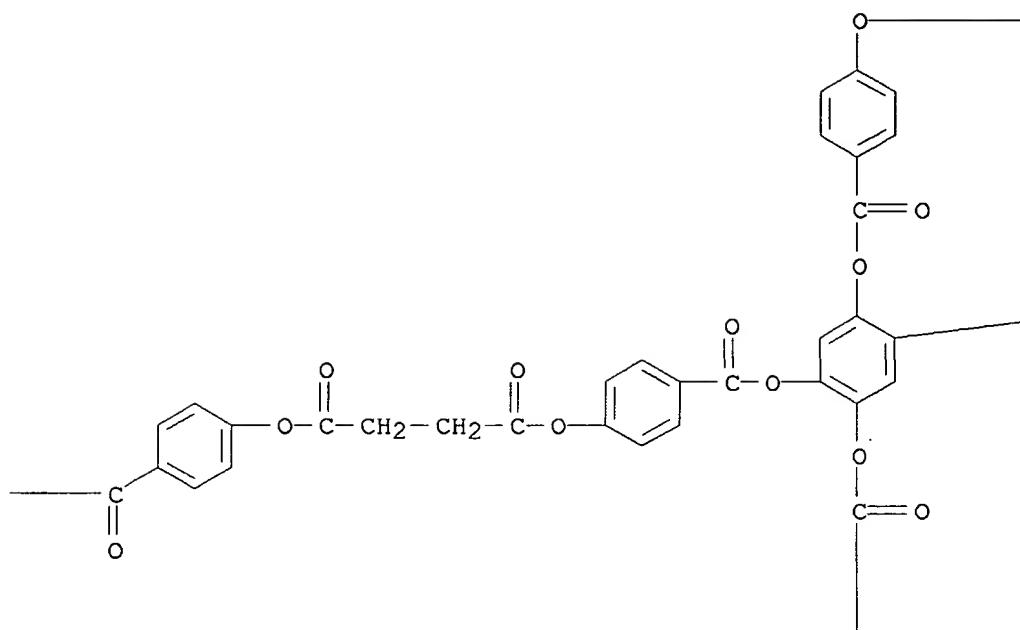
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PCT Polyester

SR CA

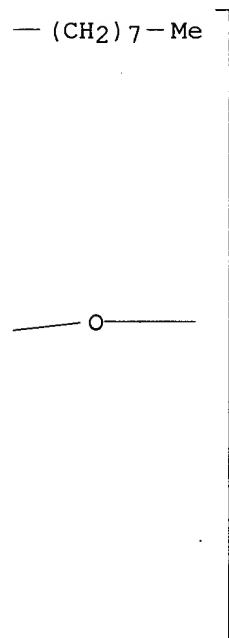
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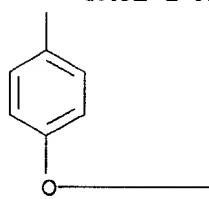


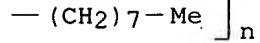
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2 REFERENCES IN FILE CA (1967 TO DATE)  
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## REFERENCE 1

AN 128:48764 CA  
 TI Synthesis and characterization of a series of liquid crystal polymers with X-shaped two-dimensional mesogenic units  
 AU Li, Z. f.; Li, L.; Zhang, S. Y.; Cao, S. K.; Zhou, Q. F.  
 CS Department of Materials Engineering, Zhengzhou University, Zhengzhou, 450052, Peop. Rep. China  
 SO Polym. Adv. Technol. (1997), 8(11), 674-682  
 CODEN: PADTE5; ISSN: 1042-7147  
 PB John Wiley & Sons Ltd.  
 DT Journal  
 LA English  
 AB Liq. crystal polymers (LCPs) with X-shaped two-dimensional mesogenic units were prep'd. via low temp. soln. polycondensation of 4,4'-(.alpha.,.omega.-alkylenedioxyloxy)dibenzoyl dichlorides and 2,5-bis(p-alkoxybenzoyloxy)-hydroquinones. The liq. cryst. behavior of the polymers was studied using DSC, polarized microscopy and x-ray diffraction. All the polymers show nematic thermotropic liq. cryst. structure, the melting temp. T<sub>m</sub> and isotropization temp. T<sub>i</sub> vary with the length of the flexible spacer and of the side groups. In the liq. crystal phase, a threaded texture was obsd. for the quinone and hydroquinone moieties, and a nematic schlieren texture with a high strength singularity was also obsd. in the hydroquinone polymers.

## REFERENCE 2

AN 120:192774 CA  
 TI Morphological studies of oriented specimens of thermotropic liquid-crystalline polyesters with two-dimensional mesogenic units  
 AU Hou, Jianan; Wu, Wei; Shen, Deyan; Xu, Mao; Li, Zifa  
 CS Inst. Chem., Acad. Sin., Beijing, 100080, Peop. Rep. China  
 SO Polymer (1994), 35(4), 699-705  
 CODEN: POLMAG; ISSN: 0032-3861  
 DT Journal  
 LA English  
 AB Morphol. studies have been carried out in detail by means of DSC, polarizing and scanning electron microscopies, small-angle light scattering, X-ray diffraction, IR spectroscopy and refractive-index measurements for oriented specimens of thermotropic liq.-cryst. polyesters with so-called two-dimensional mesogenic units along the polymer chains, which were synthesized by soln. polycondensation of the monomers 4,4'-(alkylene dioxyloxy)dibenzoyl dichloride and 2,5-dihydroxyl-1,4-phenylene di-p-alkyloxybenzoate at low temps. All the studied polyesters exhibited nematic liq.-cryst. behavior above their m.ps. Mat-like or banded textures have been obsd. in oriented films of these specimens, which were prep'd. by shearing in the mesomorphic state and subsequent quenching to room temp. The three specimens had different mol. wts., and such differences were found to influence strongly the features and ease of formation of the banded structure: the bandwidth was decreased and band quality was improved with increasing mol. wt. Furthermore, bandwidth could also be changed sensitively on varying the shearing rate during prep'n. of oriented specimens. In one case, the orientation direction of

fibrils aggregated by polymer chains was found to deviate from the shearing direction alternately by a deviation angle of about  $\pm 30$  degree., on going from band to band. The zigzag planes of oriented fibrils, which have av. diam. ranging from 50 to 100 nm, are parallel or nearly parallel to the specimen surface, and they are stacked layer-like along the specimen thickness direction. The planes including the intersected X-shaped mesogens may be oriented parallel or nearly parallel to the zigzag plane or film surface, and all the phenylene rings tend to orient their planes parallel to the zigzag plane as a whole. The banded texture and its interior structure were quite thermally stable even at temps. somewhat higher than the isotropization point of the unoriented polymer, suggesting that the thermal motions of individual polymer chains are severely limited and do not easily destroy the fibrillar structure and other supermol. structures formed in the process of prep. oriented films.

L7 ANSWER 3 OF 12 REGISTRY COPYRIGHT 2001 ACS

RN 154032-75-4 REGISTRY

CN Butanedioic acid, bis[4-(chlorocarbonyl)phenyl] ester, polymer with 2,5-dihydroxy-1,4-phenylene bis[4-(octyloxy)benzoate] (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Benzoic acid, 4-(octyloxy)-, 2,5-dihydroxy-1,4-phenylene ester, polymer with bis[4-(chlorocarbonyl)phenyl] butanedioate (9CI)

MF (C<sub>36</sub> H<sub>46</sub> O<sub>8</sub> . C<sub>18</sub> H<sub>12</sub> Cl<sub>2</sub> O<sub>6</sub>)<sub>x</sub>

CI PMS

PCT Polyester, Polyester formed

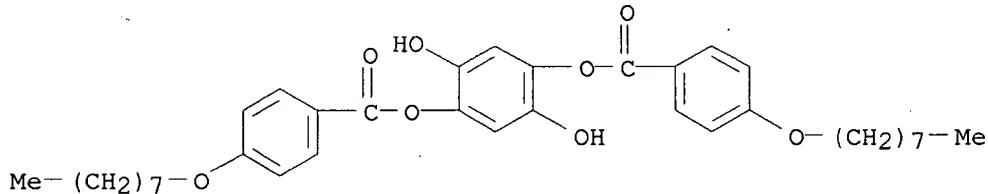
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LC STN Files: CA, CAPLUS

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CRN 154032-72-1

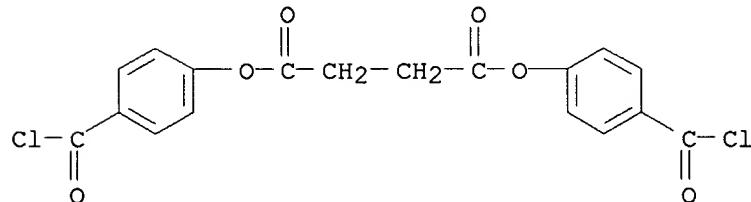
CMF C<sub>36</sub> H<sub>46</sub> O<sub>8</sub>



CM 2

CRN 123374-36-7

CMF C<sub>18</sub> H<sub>12</sub> Cl<sub>2</sub> O<sub>6</sub>



2 REFERENCES IN FILE CA (1967 TO DATE)

2 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1

AN 128:48764 CA

TI Synthesis and characterization of a series of liquid crystal polymers with

AU X-shaped two-dimensional mesogenic units  
AU Li, Z. f.; Li, L.; Zhang, S. Y.; Cao, S. K.; Zhou, Q. F.  
CS Department of Materials Engineering, Zhengzhou University, Zhengzhou,  
450052, Peop. Rep. China  
SO Polym. Adv. Technol. (1997), 8(11), 674-682  
CODEN: PADTE5; ISSN: 1042-7147  
PB John Wiley & Sons Ltd.  
DT Journal  
LA English  
AB Liq. crystal polymers (LCPs) with X-shaped two-dimensional mesogenic units were prep'd. via low temp. soln. polycondensation of 4,4'-(.alpha.,.omega.-alkylenedioxyloxy)dibenzoyl dichlorides and 2,5-bis(p-alkoxybenzoyloxy)-hydroquinones. The liq. cryst. behavior of the polymers was studied using DSC, polarized microscopy and x-ray diffraction. All the polymers show nematic thermotropic liq. cryst. structure, the melting temp. Tm and isotropization temp. Ti vary with the length of the flexible spacer and of the side groups. In the liq. crystal phase, a threaded texture was obsd. for the quinone and hydroquinone moieties, and a nematic schlieren texture with a high strength singularity was also obsd. in the hydroquinone polymers.

REFERENCE 2

AN 120:192774 CA  
TI Morphological studies of oriented specimens of thermotropic liquid-crystalline polyesters with two-dimensional mesogenic units  
AU Hou, Jianan; Wu, Wei; Shen, Deyan; Xu, Mao; Li, Zifa  
CS Inst. Chem., Acad. Sin., Beijing, 100080, Peop. Rep. China  
SO Polymer (1994), 35(4), 699-705  
CODEN: POLMAG; ISSN: 0032-3861  
DT Journal  
LA English  
AB Morphol. studies have been carried out in detail by means of DSC, polarizing and scanning electron microscopies, small-angle light scattering, X-ray diffraction, IR spectroscopy and refractive-index measurements for oriented specimens of thermotropic liq.-cryst. polyesters with so-called two-dimensional mesogenic units along the polymer chains, which were synthesized by soln. polycondensation of the monomers 4,4'-(alkylene dioxyloxy)dibenzoyl dichloride and 2,5-dihydroxyl-1,4-phenylene di-p-alkyloxybenzoate at low temps. All the studied polyesters exhibited nematic liq.-cryst. behavior above their m.ps. Mat-like or banded textures have been obsd. in oriented films of these specimens, which were prep'd. by shearing in the mesomorphic state and subsequent quenching to room temp. The three specimens had different mol. wts., and such differences were found to influence strongly the features and ease of formation of the banded structure: the bandwidth was decreased and band quality was improved with increasing mol. wt. Furthermore, bandwidth could also be changed sensitively on varying the shearing rate during prepn. of oriented specimens. In one case, the orientation direction of fibrils aggregated by polymer chains was found to deviate from the shearing direction alternately by a deviation angle of about .+-30.degree., on going from band to band. The zigzag planes of oriented fibrils, which have av. diam. ranging from 50 to 100 nm, are parallel or nearly parallel to the specimen surface, and they are stacked layer-like along the specimen thickness direction. The planes including the intersected X-shaped mesogens may be oriented parallel or nearly parallel to the zigzag plane or film surface, and all the phenylene rings tend to orient their planes parallel to the zigzag plane as a whole. The banded texture and its interior structure were quite thermally stable even at temps. somewhat higher than the isotropization point of the unoriented polymer, suggesting that the thermal motions of individual polymer chains are severely limited and do not easily destroy the fibrillar structure and other supermol. structures formed in the process of prep. oriented films.

L7 ANSWER 4 OF 12 REGISTRY COPYRIGHT 2001 ACS  
RN 154032-74-3 REGISTRY  
CN Poly[oxy[2,5-bis[[4-(octyloxy)benzoyl]oxy]-1,4-phenylene]oxycarbonyl-1,4-

phenyleneoxy(1,7-dioxo-1,7-heptanediyil)oxy-1,4-phenylene carbonyl] (9CI)  
(CA INDEX NAME)

MF (C<sub>57</sub> H<sub>62</sub> O<sub>14</sub>)<sub>n</sub>

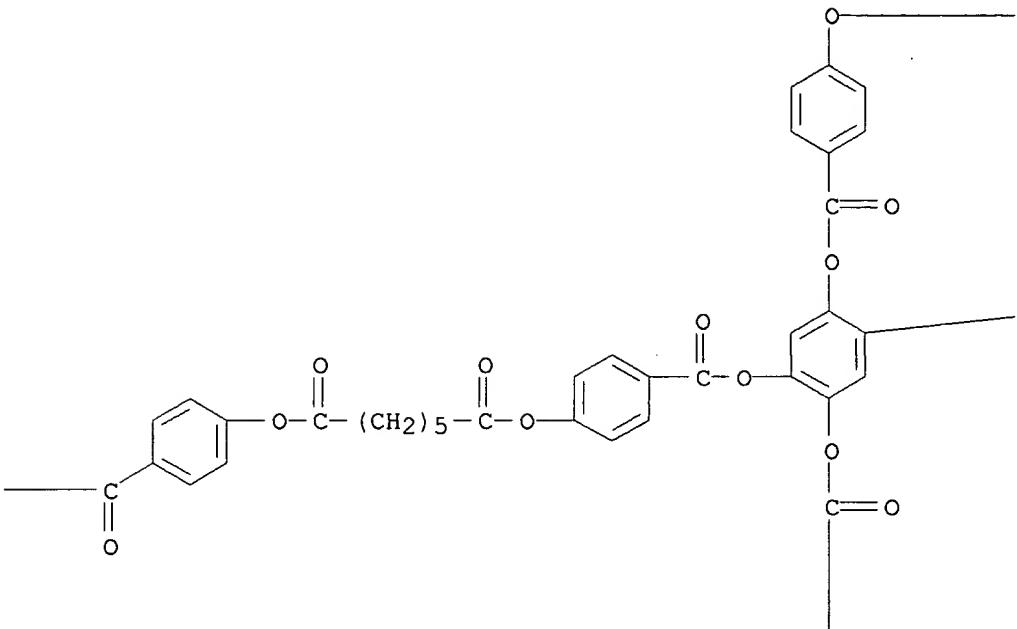
CI PMS

PCT Polyester

SR CA

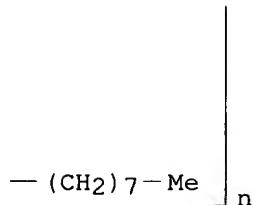
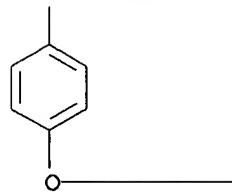
LC STN Files: CA, CAPLUS

PAGE 1-A



PAGE 1-B

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1 REFERENCES IN FILE CA (1967 TO DATE)  
 1 REFERENCES IN FILE CAPLUS (1967 TO DATE)

## REFERENCE 1

AN 120:192774 CA  
 TI Morphological studies of oriented specimens of thermotropic liquid-crystalline polyesters with two-dimensional mesogenic units  
 AU Hou, Jianan; Wu, Wei; Shen, Deyan; Xu, Mao; Li, Zifa  
 CS Inst. Chem., Acad. Sin., Beijing, 100080, Peop. Rep. China  
 SO Polymer (1994), 35(4), 699-705  
 CODEN: POLMAG; ISSN: 0032-3861  
 DT Journal  
 LA English  
 AB Morphol. studies have been carried out in detail by means of DSC, polarizing and scanning electron microscopies, small-angle light scattering, X-ray diffraction, IR spectroscopy and refractive-index measurements for oriented specimens of thermotropic liq.-cryst. polyesters with so-called two-dimensional mesogenic units along the polymer chains, which were synthesized by soln. polycondensation of the monomers 4,4'-(alkylene dioxydioxo)dibenzoyl dichloride and 2,5-dihydroxyl-1,4-phenylene di-p-alkyloxybenzoate at low temps. All the studied polyesters exhibited nematic liq.-cryst. behavior above their m.ps. Mat-like or banded textures have been obsd. in oriented films of these specimens, which were prepnd. by shearing in the mesomorphic state and subsequent quenching to room temp. The three specimens had different mol. wts., and such differences were found to influence strongly the features and ease of formation of the banded structure: the bandwidth was decreased and band quality was improved with increasing mol. wt. Furthermore, bandwidth could also be changed sensitively on varying the shearing rate during prepn. of oriented specimens. In one case, the orientation direction of fibrils aggregated by polymer chains was found to deviate from the shearing direction alternately by a deviation angle of about .+-30.degree., on going from band to band. The zigzag planes of oriented fibrils, which have av. diam. ranging from 50 to 100 nm, are parallel or nearly parallel to the specimen surface, and they are stacked layer-like along the specimen thickness direction. The planes including the intersected X-shaped mesogens may be oriented parallel or nearly parallel to the zigzag plane or film surface, and all the phenylene rings tend to orient their planes parallel to the zigzag plane as a whole. The banded texture and its interior structure were quite thermally stable even at temps. somewhat higher than the isotropization point of the unoriented polymer, suggesting that the thermal motions of individual polymer chains are severely limited and do not easily destroy the fibrillar structure and other supermol. structures formed in the process of prep. oriented films.

L7 ANSWER 5 OF 12 REGISTRY COPYRIGHT 2001 ACS

RN 154032-73-2 REGISTRY

CN Heptanedioic acid, bis[4-(chlorocarbonyl)phenyl] ester, polymer with 2,5-dihydroxy-1,4-phenylene bis[4-(octyloxy)benzoate] (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Benzoic acid, 4-(octyloxy)-, 2,5-dihydroxy-1,4-phenylene ester, polymer with bis[4-(chlorocarbonyl)phenyl] heptanedioate (9CI)

MF (C36 H46 O8 . C21 H18 Cl2 O6)x

CI PMS

PCT Polyester, Polyester formed

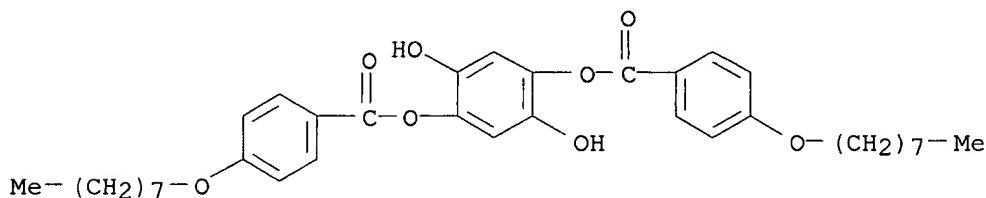
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LC STN Files: CA, CAPLUS

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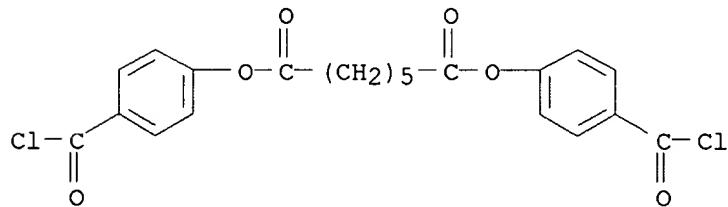
CMF C36 H46 O8



CM 2

CRN 118330-68-0

CMF C21 H18 Cl2 O6



1 REFERENCES IN FILE CA (1967 TO DATE)

1 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1

AN 120:192774 CA

TI Morphological studies of oriented specimens of thermotropic liquid-crystalline polyesters with two-dimensional mesogenic units

AU Hou, Jianan; Wu, Wei; Shen, Deyan; Xu, Mao; Li, Zifa

CS Inst. Chem., Acad. Sin., Beijing, 100080, Peop. Rep. China

SO Polymer (1994), 35(4), 699-705

CODEN: POLMAG; ISSN: 0032-3861

DT Journal

LA English

AB Morphol. studies have been carried out in detail by means of DSC, polarizing and scanning electron microscopies, small-angle light scattering, X-ray diffraction, IR spectroscopy and refractive-index measurements for oriented specimens of thermotropic liq.-cryst. polyesters with so-called two-dimensional mesogenic units along the polymer chains, which were synthesized by soln. polycondensation of the monomers 4,4'-(alkylene dioxydioxo) dibenzoyl dichloride and 2,5-dihydroxyl-1,4-

phenylene di-p-alkyloxybenzoate at low temps. All the studied polyesters exhibited nematic liq.-cryst. behavior above their m.ps. Mat-like or banded textures have been obsd. in oriented films of these specimens, which were prep'd. by shearing in the mesomorphic state and subsequent quenching to room temp. The three specimens had different mol. wts., and such differences were found to influence strongly the features and ease of formation of the banded structure: the bandwidth was decreased and band quality was improved with increasing mol. wt. Furthermore, bandwidth could also be changed sensitively on varying the shearing rate during prepn. of oriented specimens. In one case, the orientation direction of fibrils aggregated by polymer chains was found to deviate from the shearing direction alternately by a deviation angle of about  $\pm 30$ .degree., on going from band to band. The zigzag planes of oriented fibrils, which have av. diam. ranging from 50 to 100 nm, are parallel or nearly parallel to the specimen surface, and they are stacked layer-like along the specimen thickness direction. The planes including the intersected X-shaped mesogens may be oriented parallel or nearly parallel to the zigzag plane or film surface, and all the phenylene rings tend to orient their planes parallel to the zigzag plane as a whole. The banded texture and its interior structure were quite thermally stable even at temps. somewhat higher than the isotropization point of the unoriented polymer, suggesting that the thermal motions of individual polymer chains are severely limited and do not easily destroy the fibrillar structure and other supermol. structures formed in the process of prep.. oriented films.

L7 ANSWER 6 OF 12 REGISTRY COPYRIGHT 2001 ACS

RN 154032-71-0 REGISTRY

CN Poly[oxy{2,5-bis[[4-(hexyloxy)benzoyl]oxy]-1,4-phenylene}oxycarbonyl-1,4-phenyleneoxy(1,4-dioxo-1,4-butanediyl)oxy-1,4-phenylenecarbonyl] (9CI)  
(CA INDEX NAME)

MF (C<sub>50</sub> H<sub>48</sub> O<sub>14</sub>)<sub>n</sub>

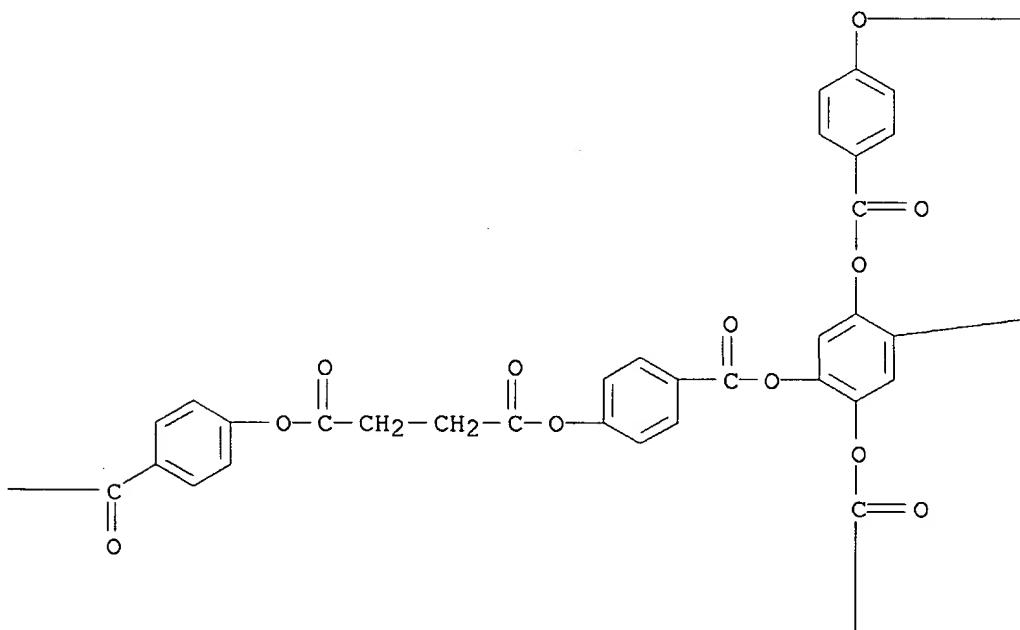
CI PMS

PCT Polyester

SR CA

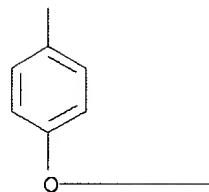
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PAGE 1-A



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— O —



— (CH<sub>2</sub>)<sub>5</sub>—Me

2 REFERENCES IN FILE CA (1967 TO DATE)  
 2 REFERENCES IN FILE CAPLUS (1967 TO DATE)

## REFERENCE 1

AN 128:48764 CA  
 TI Synthesis and characterization of a series of liquid crystal polymers with X-shaped two-dimensional mesogenic units  
 AU Li, Z. f.; Li, L.; Zhang, S. Y.; Cao, S. K.; Zhou, Q. F.  
 CS Department of Materials Engineering, Zhengzhou University, Zhengzhou, 450052, Peop. Rep. China ✓  
 SO Polym. Adv. Technol. (1997), 8(11), 674-682  
 CODEN: PADTE5; ISSN: 1042-7147  
 PB John Wiley & Sons Ltd.  
 DT Journal  
 LA English  
 AB Liq. crystal polymers (LCPs) with X-shaped two-dimensional mesogenic units

were prep'd. via low temp. soln. polycondensation of 4,4'-(.alpha.,.omega.-alkylenedioxy)dibenzoyl dichlorides and 2,5-bis(p-alkoxybenzoyloxy)-hydroquinones. The liq. cryst. behavior of the polymers was studied using DSC, polarized microscopy and x-ray diffraction. All the polymers show nematic thermotropic liq. cryst. structure, the melting temp. T<sub>m</sub> and isotropization temp. T<sub>i</sub> vary with the length of the flexible spacer and of the side groups. In the liq. crystal phase, a threaded texture was obsd. for the quinone and hydroquinone moieties, and a nematic schlieren texture with a high strength singularity was also obsd. in the hydroquinone polymers.

REFERENCE 2

AN 120:192774 CA  
TI Morphological studies of oriented specimens of thermotropic liquid-crystalline polyesters with two-dimensional mesogenic units  
AU Hou, Jianan; Wu, Wei; Shen, Deyan; Xu, Mao; Li, Zifa  
CS Inst. Chem., Acad. Sin., Beijing, 100080, Peop. Rep. China  
SO Polymer (1994), 35(4), 699-705  
CODEN: POLMAG; ISSN: 0032-3861  
DT Journal  
LA English  
AB Morphol. studies have been carried out in detail by means of DSC, polarizing and scanning electron microscopies, small-angle light scattering, X-ray diffraction, IR spectroscopy and refractive-index measurements for oriented specimens of thermotropic liq.-cryst. polyesters with so-called two-dimensional mesogenic units along the polymer chains, which were synthesized by soln. polycondensation of the monomers 4,4'-(alkylene dioxydioxo)dibenzoyl dichloride and 2,5-dihydroxyl-1,4-phenylene di-p-alkyloxybenzoate at low temps. All the studied polyesters exhibited nematic liq.-cryst. behavior above their m.ps. Mat-like or banded textures have been obsd. in oriented films of these specimens, which were prep'd. by shearing in the mesomorphic state and subsequent quenching to room temp. The three specimens had different mol. wts., and such differences were found to influence strongly the features and ease of formation of the banded structure: the bandwidth was decreased and band quality was improved with increasing mol. wt. Furthermore, bandwidth could also be changed sensitively on varying the shearing rate during prepn. of oriented specimens. In one case, the orientation direction of fibrils aggregated by polymer chains was found to deviate from the shearing direction alternately by a deviation angle of about .+-30.degree., on going from band to band. The zigzag planes of oriented fibrils, which have av. diam. ranging from 50 to 100 nm, are parallel or nearly parallel to the specimen surface, and they are stacked layer-like along the specimen thickness direction. The planes including the intersected X-shaped mesogens may be oriented parallel or nearly parallel to the zigzag plane or film surface, and all the phenylene rings tend to orient their planes parallel to the zigzag plane as a whole. The banded texture and its interior structure were quite thermally stable even at temps. somewhat higher than the isotropization point of the unoriented polymer, suggesting that the thermal motions of individual polymer chains are severely limited and do not easily destroy the fibrillar structure and other supermol. structures formed in the process of prep'd. oriented films.

L7 ANSWER 7 OF 12 REGISTRY COPYRIGHT 2001 ACS

RN 154032-70-9 REGISTRY

CN Butanedioic acid, bis[4-(chlorocarbonyl)phenyl] ester, polymer with 2,5-dihydroxy-1,4-phenylene bis[4-(hexyloxy)benzoate] (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Benzoic acid, 4-(hexyloxy)-, 2,5-dihydroxy-1,4-phenylene ester, polymer with bis[4-(chlorocarbonyl)phenyl] butanedioate (9CI)

MF (C32 H38 O8 . C18 H12 C12 O6)x

CI PMS

PCT Polyester, Polyester formed

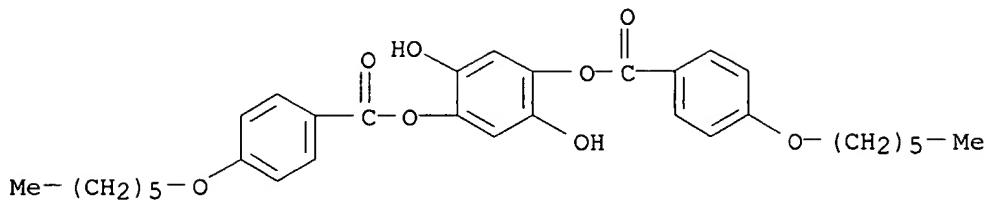
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LC STN Files: CA, CAPLUS

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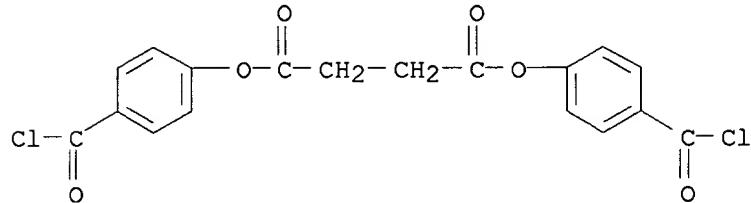
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CM 2

CRN 123374-36-7

CMF C18 H12 Cl2 O6



2 REFERENCES IN FILE CA (1967 TO DATE)  
2 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1

AN 128:48764 CA  
TI Synthesis and characterization of a series of liquid crystal polymers with X-shaped two-dimensional mesogenic units  
AU Li, Z. f.; Li, L.; Zhang, S. Y.; Cao, S. K.; Zhou, Q. F.  
CS Department of Materials Engineering, Zhengzhou University, Zhengzhou, 450052, Peop. Rep. China  
SO Polym. Adv. Technol. (1997), 8(11), 674-682  
CODEN: PADTE5; ISSN: 1042-7147  
PB John Wiley & Sons Ltd.  
DT Journal  
LA English  
AB Liq. crystal polymers (LCPs) with X-shaped two-dimensional mesogenic units were prep'd. via low temp. soln. polycondensation of 4,4'-(.alpha.,.omega.-alkylenedioxyloxy)dibenzoyl dichlorides and 2,5-bis(p-alkoxybenzoyloxy)-hydroquinones. The liq. cryst. behavior of the polymers was studied using DSC, polarized microscopy and x-ray diffraction. All the polymers show nematic thermotropic liq. cryst. structure, the melting temp. T<sub>m</sub> and isotropization temp. T<sub>i</sub> vary with the length of the flexible spacer and of the side groups. In the liq. crystal phase, a threaded texture was obsd. for the quinone and hydroquinone moieties, and a nematic schlieren texture with a high strength singularity was also obsd. in the hydroquinone polymers.

REFERENCE 2

AN 120:192774 CA  
TI Morphological studies of oriented specimens of thermotropic liquid-crystalline polyesters with two-dimensional mesogenic units  
AU Hou, Jianan; Wu, Wei; Shen, Deyan; Xu, Mao; Li, Zifa  
CS Inst. Chem., Acad. Sin., Beijing, 100080, Peop. Rep. China

SO Polymer (1994), 35(4), 699-705  
CODEN: POLMAG; ISSN: 0032-3861

DT Journal  
LA English

AB Morphol. studies have been carried out in detail by means of DSC, polarizing and scanning electron microscopies, small-angle light scattering, X-ray diffraction, IR spectroscopy and refractive-index measurements for oriented specimens of thermotropic liq.-cryst. polyesters with so-called two-dimensional mesogenic units along the polymer chains, which were synthesized by soln. polycondensation of the monomers 4,4'-(alkylene dioxydioxo)dibenzoyl dichloride and 2,5-dihydroxyl-1,4-phenylene di-p-alkyloxybenzoate at low temps. All the studied polyesters exhibited nematic liq.-cryst. behavior above their m.ps. Mat-like or banded textures have been obsd. in oriented films of these specimens, which were prepnd. by shearing in the mesomorphic state and subsequent quenching to room temp. The three specimens had different mol. wts., and such differences were found to influence strongly the features and ease of formation of the banded structure: the bandwidth was decreased and band quality was improved with increasing mol. wt. Furthermore, bandwidth could also be changed sensitively on varying the shearing rate during prepn. of oriented specimens. In one case, the orientation direction of fibrils aggregated by polymer chains was found to deviate from the shearing direction alternately by a deviation angle of about .+-30.degree., on going from band to band. The zigzag planes of oriented fibrils, which have av. diam. ranging from 50 to 100 nm, are parallel or nearly parallel to the specimen surface, and they are stacked layer-like along the specimen thickness direction. The planes including the intersected X-shaped mesogens may be oriented parallel or nearly parallel to the zigzag plane or film surface, and all the phenylene rings tend to orient their planes parallel to the zigzag plane as a whole. The banded texture and its interior structure were quite thermally stable even at temps. somewhat higher than the isotropization point of the unoriented polymer, suggesting that the thermal motions of individual polymer chains are severely limited and do not easily destroy the fibrillar structure and other supermol. structures formed in the process of prep. oriented films.

L7 ANSWER 8 OF 12 REGISTRY COPYRIGHT 2001 ACS

RN 109678-32-2 REGISTRY

CN Cholest-5-en-3-ol (3.beta.)-, 6-[(2-methyl-1-oxo-2-propenyl)oxy]hexanoate, polymer with 2-ethyl-2-[(2-methyl-1-oxo-2-propenyl)oxy]methyl]-1,3-propanediyl bis(2-methyl-2-propenoate) and 2-methyl-1,4-phenylene bis[4-(hexyloxy)benzoate] (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN 2-Propenoic acid, 2-methyl-, 2-ethyl-2-[(2-methyl-1-oxo-2-propenyl)oxy]methyl]-1,3-propanediyl ester, polymer with (3.beta.)-cholest-5-en-3-yl 6-[(2-methyl-1-oxo-2-propenyl)oxy]hexanoate and 2-methyl-1,4-phenylene bis[4-(hexyloxy)benzoate] (9CI)

CN Benzoic acid, 4-(hexyloxy)-, 2-methyl-1,4-phenylene ester, polymer with (3.beta.)-cholest-5-en-3-yl 6-[(2-methyl-1-oxo-2-propenyl)oxy]hexanoate and 2-ethyl-2-[(2-methyl-1-oxo-2-propenyl)oxy]methyl]-1,3-propanediyl bis(2-methyl-2-propenoate) (9CI)

FS STEREOSEARCH

MF (C37 H60 O4 . C33 H40 O6 . C18 H26 O6)x

CI PMS

PCT Polyacrylic, Polyether

SR CA

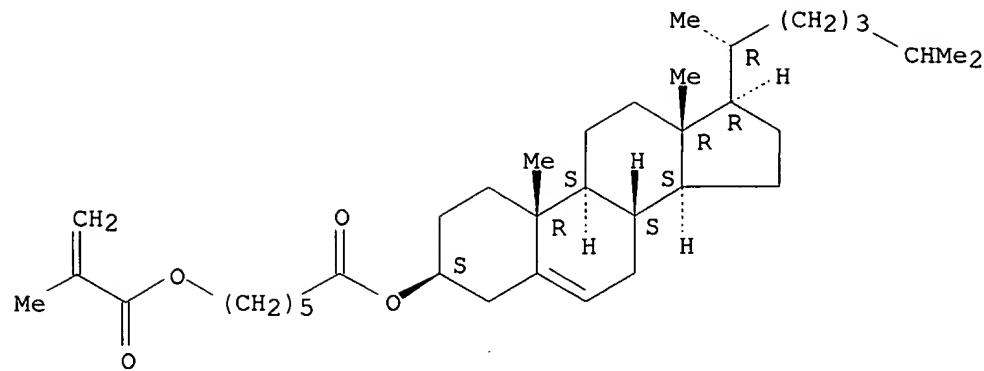
LC STN Files: CA, CAPLUS, USPATFULL

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CRN 77225-90-2

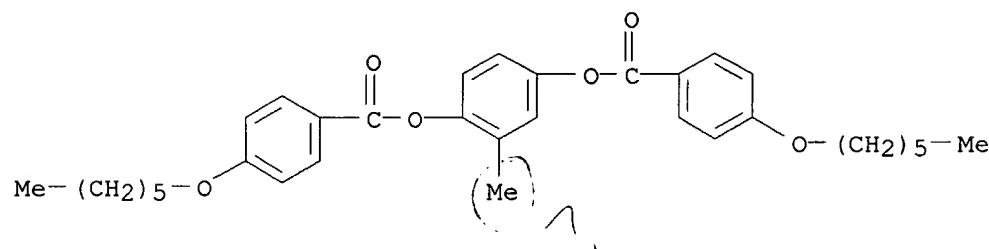
CMF C37 H60 O4

Absolute stereochemistry.



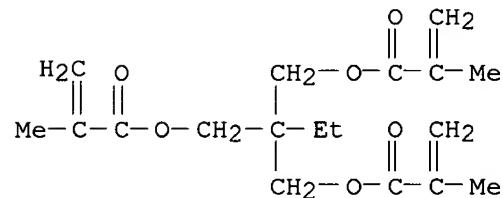
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CMF C33 H40 06



CM 3

CRN 3290-92-4  
CMF C18 H26 06



1 REFERENCES IN FILE CA (1967 TO DATE)  
1 REFERENCES IN FILE CAPLUS (1967 TO DATE)

## REFERENCE 1

AN 107:79629 CA

## TI      Polymeric liquid crystals

IN Shannon, Paul J.

PA Armstrong World Industries, Inc., USA

SO U.S., 10 pp. Cont.-in-part of U.S. Ser. No. 450,089, abandoned.  
CODEN: USXXAM

DT Patent

## LA English

FAN.CNT 2

/ PATENT

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PI US 4637

CA 1214592

JP 59109505

JP 02024297

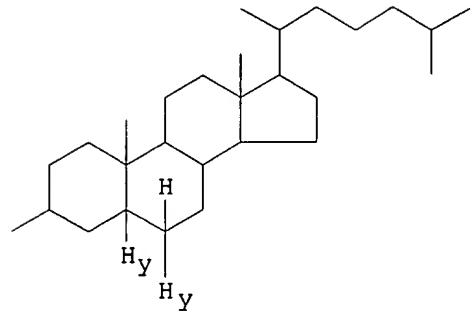
APPLICATION NO. DATE

US 1984-660038 19841012

CA 1983-431937 19830706

JP 1983-140666 19830802

DE 3340954	A1 19840719	DE 1983-3340954	19831111
DE 3340954	C2 19860717		
FR 2537989	A1 19840622	FR 1983-19297	19831202
FR 2537989	B1 19870605		
NL 8304277	A 19840702	NL 1983-4277	19831213
NL 186584	B 19900801		
NL 186584	C 19910102		
GB 2132623	A1 19840711	GB 1983-33324	19831214
GB 2132623	B2 19870610		
PRAI US 1982-450089	19821215		
GI			



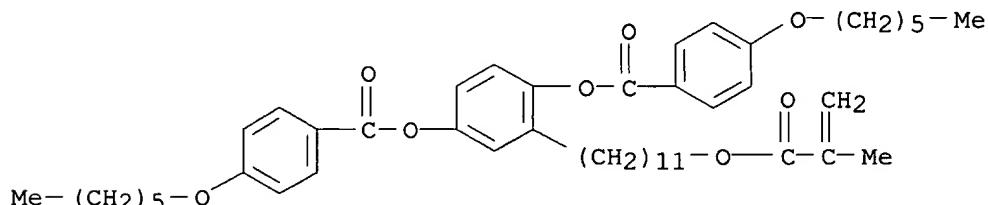
II

AB Coatings having a fixed cholesteric optical response, useful in decorative coatings, comprise photopolymerizable monomers  $\text{CH}_2:\text{CR}_1\text{CO}_2\text{ZCO}_2\text{R}$  [I,  $\text{R}_1 = \text{H}$ ,  $\text{Me}$ ;  $\text{Z} = \text{divalent R}_2$ ,  $\text{R}_{30}$ ,  $\text{R}_{40}$ ;  $\text{R}_2 = [(\text{substituted}) \text{ methylene}]3-14$ ;  $\text{R}_3 = [(\text{substituted}) \text{ methylene}]2-14$ ;  $\text{R}_4 = \text{C}_3-14$  alkylene ether, diether or triether; the terminal alkylene moiety adjacent to carbonate has  $\geq 2$  C atoms;  $\text{R} = \text{II}$ ;  $y = 0$  or  $1$ ]. A compn. contg. I ( $\text{R}_1 = \text{Me}$ ,  $y = 0$ ,  $\text{R}_2 = 10$ ) (III) 100, I ( $\text{R}_1 = \text{Me}$ ,  $y = 1$ ,  $\text{R}_2 = 3$ ) (IV) 100, benzophenone 2, IRGACURE 2, trimethylolpropane trimethacrylate 6 parts was sandwiched between clear polyester film and pressed with a roller to give a texture. The III-IV-trimethylolpropane trimethacrylate copolymer film was orange but was vividly iridescent orange-pink when light was shown on the surface at a low angle.

L7 ANSWER 9 OF 12 REGISTRY COPYRIGHT 2001 ACS  
 RN 103467-68-1 REGISTRY  
 CN Benzoic acid, 4-(hexyloxy)-, 2-[11-[(2-methyl-1-oxo-2-propenyl)oxy]undecyl]-1,4-phenylene ester, homopolymer (9CI) (CA INDEX NAME)  
 DR 197974-55-3  
 MF (C<sub>47</sub> H<sub>64</sub> O<sub>8</sub>)<sub>x</sub>  
 CI PMS  
 PCT Polyacrylic  
 SR CA  
 LC STN Files: CA, CAPLUS, USPATFULL

CM 1

CRN 103467-67-0  
 CMF C<sub>47</sub> H<sub>64</sub> O<sub>8</sub>



13 REFERENCES IN FILE CA (1967 TO DATE)  
13 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1

AN 128:102672 CA  
TI Biaxiality phenomenon in molecular properties of comb LC polymer with lateral structure: first evidence  
AU Lavrenko, Peter; Yevlampiyeva, Natalia; Finkelmann, Heino  
CS Institute of Macromolecular Compounds, Russian Academy of Sciences, St. Petersburg, 199004, Russia  
SO Mol. Cryst. Liq. Cryst. Sci. Technol., Sect. A (1997), 299, 259-264  
CODEN: MCLCE9; ISSN: 1058-725X  
PB Gordon & Breach Science Publishers  
DT Journal  
LA English  
AB Dynamooptical and electrooptical properties have been investigated in dil. solns. for comb-like LC polymer with mesogenic groups laterally attached by middle point to the macromol. backbone via flexible spacer. For polymer soln. in chloroform, the T-range was found where the Kerr const. K is increasing (in abs. value) with increasing T while the shear optical coeff.  $[n]/[\eta]$  remains invariable. This reflects the intramol. parking of the mesogen dipole axes with keeping the same order in mesogen optical axes. Dipole axis of the mesogenic group in the chain of this polymer is known to form a large angle with the optical one. Hence, the result can be explained by change in the mesogen short axes parking with the invariable long axes one. By other words, as evidence for present biaxiality phenomenon in mol. properties of the polymer.

REFERENCE 2

AN 127:332041 CA  
TI Rheology and Shear Orientation of a Nematic Liquid Crystalline Side-Group Polymer with Laterally Attached Mesogenic Units  
AU Berghausen, Joerg; Fuchs, Joachim; Richtering, Walter  
CS Institut fuer Makromolekulare Chemie, Albert-Ludwigs-Universitaet Freiburg i. Br., Freiburg, D-79104, Germany  
SO Macromolecules (1997), 30(24), 7574-7581  
CODEN: MAMOBX; ISSN: 0024-9297  
PB American Chemical Society  
DT Journal  
LA English  
AB The shear orientation of a nematic side-group liq. cryst. polymer (SG-LCP) with side-on fixed mesogenic units was investigated by means of rheo-birefringence and rheo-small angle light scattering. Rheol. properties of the polymer depend on mol. wt. Macroscopically aligned samples were obtained in creep expts., but the orientation was destroyed by oscillatory shear flow. The shear modulus of a low molar mass sample in the nematic and isotropic phase superposed to a common master curve. The low-frequency modulus of a high molar mass sample, however, decreased at the phase transition, and time-tempr. superposition was not possible. Preshearing led to a further decrease of the modulus. Rheo-birefringence measurements revealed a clear influence of molar mass on both the final value and the orientation state after cessation of shear. Rheo-small angle light scattering also showed a strong influence of mol. wt. In polarizing microscopy, a banded texture was obsd. with a high molar mass sample. The polymer showed a pronounced pretransitional behavior. This regime slightly above the phase transition revealed a strong decoupling between the polymer backbone and the mesogens. Different relaxation times were found for creep recovery and birefringence, resp.

REFERENCE 3

AN 126:200048 CA  
TI Temperature dependence of the Maxwell effect in solution of a comblike polymer with a lateral macromolecular structure  
AU Lavrenko, P. N.; Finkelmann, H.

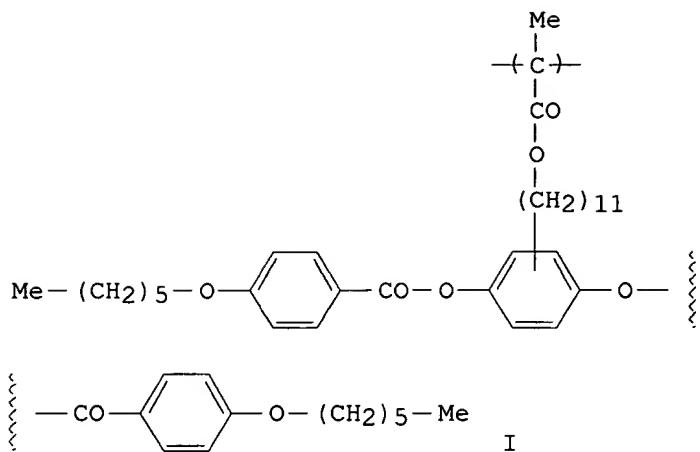
CS Inst. Macromol. Compd., Russ. Acad. Sci., St.-Petersburg, 199004, Russia  
SO Vysokomol. Soedin., Ser. A Ser. B (1996), 38(11), 1913-1916  
CODEN: VSSBEE  
PB MAIK Nauka  
DT Journal  
LA Russian  
AB A comblike polymer contg. three-ring mesogenic groups attached laterally (in the middle part) via 11-carbon spacers to the methacrylic core was investigated. The effect of temp. on the optical Maxwell const., the optical anisotropy per unit chain length, and the orientational ordering of mesogenic groups was studied. An increase in the temp. from 13 to 45.degree.C produces a two-fold decrease in the characteristic birefringence appearing in the flow of a polymer soln. in chloroform. At the same time, the optical shear coeff. remains unchanged, showing that the optical anisotropy of the statistical segment and the unit chain length are insensitive to the temp. variations. The parameter of order in the side group arrangement is detd. In the chloroform solns., the order parameter is several times higher than that in tetrachloromethane and does not vary with temp.

REFERENCE 4

AN 126:200045 CA  
TI Temperature dependence of the hydrodynamic properties of a comblike liquid-crystalline polymer with a lateral macromolecular structure  
AU Lavrenko, P. N.; Okatova, O. V.; Korneeva, E. V.; Finkelmann, H.  
CS Inst. Macromol. Compd., Russ. Acad. Sci., St.-Petersburg, 199004, Russia  
SO Vysokomol. Soedin., Ser. A Ser. B (1996), 38(11), 1845-1850  
CODEN: VSSBEE  
PB MAIK Nauka  
DT Journal  
LA Russian  
AB Characteristic viscosity [.eta.], sedimentation coeff. s, and diffusion coeff. D were detd. for benzene and chloroform solns. of a comblike polymer contg. three-ring mesogenic groups attached laterally (in the middle part) via 11-carbon spacers to the methacrylic core. Expts. were conducted at 7-73.degree.. The temp. viscosity coeff.  $d\ln[\eta]/dT$  was -0.007 K-1 in chloroform and +0.005 K-1 in benzene. For solns. characterized by mol. dispersion, an increase in temp. is accompanied by more pronounced excluded vol. effects in benzene, but less pronounced excluded vol. effects in chloroform. A decrease of equil. polymer chain rigidity was obsd. with increasing temp.; this effect was more pronounced in benzene solns.

REFERENCE 5

AN 120:135765 CA  
TI Dynamic and electric birefringence in solutions of a comb-shaped polymer with mesogenic side groups  
AU Kolomiets, I. P.; Lavrenko, P. N.; Lezov, A. V.; Ovsipyan, A. M.; Finkelmann, H.  
CS St. Petersburg State Univ., St. Petersburg, 198904, Russia  
SO Vysokomol. Soedin., Ser. A (1993), 35(10), 1620-4  
CODEN: VYSAAF; ISSN: 0507-5475  
DT Journal  
LA Russian  
GI



AB Flow and elec. birefringence of solns. of comb-shaped methacrylic polymer with a mesogenic side group contg. 3 p-phenylene rings and aliph.  $(\text{CH}_2)_{11}$  spacers in  $\text{CCl}_4$  were studied. The birefringence of I in the liq. cryst. state was measured. Optical shear coeff. and specific Kerr const. were detd.; optical anisotropy of the Kuhn statistical segment  $\Delta\alpha = -(220 \pm 30) \times 10^{-25} \text{ cm}^3$  and of the mesogen  $\Delta\alpha_b = 230 \times 10^{-25} \text{ cm}^3$  were calcd. The parameter of orientation order of mesogen groups in an isolated macromol. is near 0.

REFERENCE 6

AN 120:135551 CA  
 TI Hydrodynamic properties and conformational characteristics of macromolecules with lateral mesogenic side groups  
 AU Lavrenko, P. N.; Finkelmann, H.; Okatova, O. V.; Korneeva, E. V.; Shtibal-Fischer, E.  
 CS Inst. Macromol. Comp., St. Petersburg, 199004, Russia  
 SO Vysokomol. Soedin., Ser. A (1993), 35(10), 1652-8  
 CODEN: VYSAAF; ISSN: 0507-5475  
 DT Journal  
 LA Russian  
 AB Hydrodynamic properties of a comb-shaped polymethacrylate with lateral mesogenic groups with mesogens attached to the backbone via their center of gravity with an aliph.  $(\text{CH}_2)_{11}$  spacer were studied in dil.  $\text{C}_6\text{H}_6$  solns. In the range of mol. wts. (M) from  $5.7 \times 10^5$  to  $3.02 \times 10^6$  in a thermodynamically good solvent ( $\text{C}_6\text{H}_6$ ) the sedimentation coeff. ( $s_0$ ), diffusion coeff. ( $DA$ ), and intrinsic viscosity [ $\eta$ ] was related to M by the following relationship  $s_0 = 6.8 \times 10^{-15} M^{0.40}$  (s),  $DA = 8.0 \times 10^5 M^{-0.60}$  ( $\text{cm}^2/\text{s}$ ), and [ $\eta$ ] =  $1.25 \times 10^{-3} M^{0.77}$  ( $\text{cm}^3/\text{g}$ ), resp. The unperturbed macromol. length characterized by the Kuhn segment was  $A = 70 \pm 10 \text{ \AA}$ . And the chains exhibited high degree of hindrance of rotation around the valence bonds of the main chain ( $\sigma = 4.2$ ). Volumetric effects of the liq.-cryst. polymethacrylate in  $\text{C}_6\text{H}_6$  solns. are discussed.

REFERENCE 7

AN 119:251068 CA  
 TI Optical anisotropy and conformation of macromolecules with laterally attached mesogenic side groups  
 AU Lavrenko, Peter N.; Kolomietz, Igor P.; Finkelmann, Heino  
 CS Inst. Macromol. Compd., St. Petersburg, 199004, Russia  
 SO Macromolecules (1993), 26(25), 6800-7  
 CODEN: MAMOBX; ISSN: 0024-9297  
 DT Journal  
 LA English  
 AB Hydrodynamic, dynamooptic, and electrooptic properties are investigated in dil. solns. of a methacrylate polymer with the mesogenic cores laterally

attached to side groups. Dependences of hydrodynamic properties of mol. wt. 3.0-5.7 times. 106 and excluded vol. effects are discussed. Unperturbed dimensions of the macromol. are characterized by the Kuhn segment length 70 .+-. 10 .ANG. and by the steric factor 4.2. From flow and elec. birefringence measurements in dil. soln., as well as in the liq.-cryst. phase, a shear optical coeff. and a specific Kerr const. for a polymer in soln. are obtained. The optical anisotropy of the statistical segment and the mesogen are detd. The orientational order parameter for the mesogenic cores in the isolated macromol. is near zero.

REFERENCE 8

AN 117:27716 CA  
TI Semidilute solutions of liquid-crystalline polymers  
AU Richtering, Walter; Gleim, Wolfgang; Burchard, Walther  
CS Inst. Makromol. Chem., Univ. Freiburg, Freiburg, D-7800, Germany  
SO Macromolecules (1992), 25(14), 3795-801  
CODEN: MAMOBX; ISSN: 0024-9297  
DT Journal  
LA English  
AB The soln. properties of 2 liq.-cryst. side-chain polymers of different architecture were investigated by static and dynamic light scattering. Dil. solns. of these polymers showed common flexible chain behavior, and no indications of significant chain rigidity were obsd. In semidil. soln. the concn. dependence of the osmotic modulus revealed stronger repulsion than common linear macromols. Furthermore, a chain-length dependence was obsd. Both effects can be explained by the thickness of the polymer chain. At high concns. an excess low-angle scattering and a slow mode of motion were detected, indicating formation of large clusters. The first appearance of these clusters occurred at the same concn. for samples of different molar mass. This leads to the suggestion that attractive interactions between mesogenic groups are responsible for cluster formation. Further information on the structure of the clusters was obtained by studying fractal dimension and depolarized scattered light.

REFERENCE 9

AN 115:280989 CA  
TI MNDO-studies on electro-optical properties of liquid crystalline side chain polymers  
AU Budesheim, Klaus W.; Wendorff, Joachim H.  
CS Inst. Darmstadt, Dtsch. Kunstst., Darmstadt, 6100, Fed. Rep. Ger.  
SO J. Polym. Sci., Part A: Polym. Chem. (1991), 29(12), 1819-24  
CODEN: JPACEC; ISSN: 0887-624X  
DT Journal  
LA English  
AB The MNDO method was used to calc. electrooptical properties, such as low-energy mol. configurations, polarizability tensors, and dipole vectors of side-chain polymethacrylates with laterally attached mesogens. The Kerr const. (B0) calcd. for single mols. compared favorably with the result of the MOPAC program calcns. in the order and sign but not in the abs. values, probably due to the extrapolation procedure used to obtain B0 from exptl. data and to errors in the MNDO calcns. resulting from many internal degrees of freedom of the test mols. Selected properties of side-chain liq.-cryst. polymers can be evaluated with sufficient accuracy, considering that the predictions and exptl. data are quite close to each other.

REFERENCE 10

AN 114:248177 CA  
TI Electrooptical properties of liquid-crystalline side-chain polymers with laterally attached mesogenic units  
AU Hirschmann, H.; Jungbauer, D. A.; Wolf, M.; Wendorff, J. H.; Finkelmann, H.; Hessel, F.  
CS Dtsch. Kunstst.-Inst., Darmstadt, Fed. Rep. Ger.  
SO Polym. Adv. Technol. (1990), 1(1), 93-101

CODEN: PADTE5; ISSN: 1042-7147

DT Journal

## LA English

AB The electrooptical properties of side-chain liq.-cryst. polymers were investigated for the case that the mesogenic units were attached laterally rather than longitudinally to a flexible chain backbone via flexible spacer units. These polymers display unusual electrooptical properties within the isotropic phase in the neighborhood of the transition into the nematic phase. The polymers are characterized by the occurrence of a fast and a slow electrooptical response both of which show a crit. divergence of the Kerr const. and the Kerr relaxation time. In addn., they show deviations between the rise and the decay values of the Kerr consts. and in certain cases also of the Kerr relaxation times. Finally, an overshoot of the induced birefringence following a sudden stepwise increase of the applied elec. field is found for 1 of these polymers. All these features can be accounted for on the basis of a newly developed theor. approach that considers the particular dipolar and optical polarization configurations of these polymers.

L7 ANSWER 10 OF 12 REGISTRY COPYRIGHT 2001 ACS

RN 103467-67-0 REGISTRY

CN Benzoic acid, 4-(hexyloxy)-, 2-[11-[(2-methyl-1-oxo-2-propenyl)oxy]undecyl]-1,4-phenylene ester (9CI) (CA INDEX NAME)

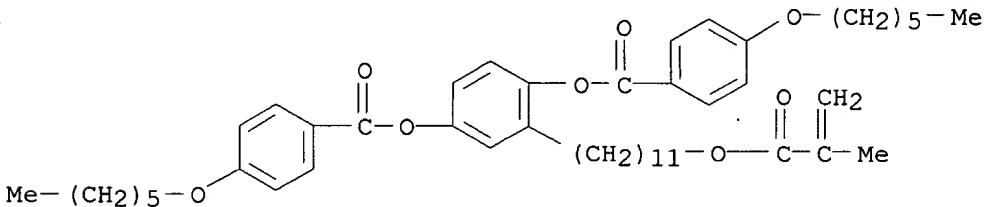
FS 3D CONCORD

MF C47 H64 08

CI COM

SR CA

LC STN Files: CA, CAPLUS, USPATFULL



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

3 REFERENCES IN FILE CA (1967 TO DATE)

3 REFERENCES IN FILE CAPLUS (1967 TO DATE)

## REFERENCE 1

AN 121:268403 CA

TI Pretransitional behavior of a nematic liquid crystal in the isotropic phase

AU Fuchs, J.; Burchard, W.

CS Inst. Macromolecular Chem., Univ. Freiburg, Freiburg, 79104, Germany

SO J. Phys. II (1994), 4(9), 1451-6

CODEN: JPAHER; ISSN: 1155-4312

DT Journal

## LA English

AB Polarized and depolarized light scattering measurements were performed from a nematic liq. cryst. in the isotropic region, approaching the nematic phase transition. A crit. static scattering intensity and a crit. slowing-down of the orientational fluctuations were obsd. in a temp. range of .apprx.10.degree. above the phase transition which followed a  $(T-T_c^*)^{-\gamma}$  dependence, but with an exponent slightly smaller than unity. The angular dependence of the polarized static scattering intensity differed in behavior from other liq. crystals by the occurrence of a strong excess scattering at small scattering angles. These observations give evidence for spatial structural heterogeneities, spherical in shape and optically isotropic, in a bath of a nematic liq.

cryst. system. This conclusion is confirmed by dynamic light scattering where in addn. a slow mode appeared in the time correlation function which results from random migration of these heterogeneities.

REFERENCE 2

AN 107:116039 CA  
TI Synthesis and characterization of biaxial nematic side chain polymers with laterally attached mesogenic groups  
AU Hessel, Friedrich; Herr, Rolf Peter; Finkelmann, Heino  
CS Inst. Makromol. Chem., Univ. Freiburg, Freiburg, 7800, Fed. Rep. Ger.  
SO Makromol. Chem. (1987), 188(7), 1597-611  
CODEN: MACEAK; ISSN: 0025-116X  
DT Journal  
LA English  
AB The synthesis and characterization of liq.-cryst. side chain polymers with mesogenic groups laterally attached to the polymer main chain were described. By variation of the terminal group, mesogenic moiety of spacer length, a change in the glass transition temp., the nematic to isotropic transformation temp. and the stability of the nematic phase could be achieved. With increasing length of terminal groups, a distinct odd-even effect of the nematic to isotropic phase transformation and also a strong decrease of the glass transition temp. was obsd. Macroscopic homeotropic alignment could be achieved in an elec. or magnetic field. Conoscopic investigation showed optical biaxial behavior of the nematic phase. A chiral nematic copolymer was the first example of a thermotropic biaxial cholesteric phase.

REFERENCE 3

AN 107:87347 CA  
TI Polymers showing liquid crystalline phases  
IN Finkelmann, Heino; Hessel, Friedrich; Eidenschink, Rudolf; Krause, Joachim  
PA Merck Patent G.m.b.H., Fed. Rep. Ger.  
SO Ger. Offen., 12 pp.  
CODEN: GWXXBX  
DT Patent  
LA German  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 3534646	A1	19870402	DE 1985-3534646	19850928
	EP 220463	A2	19870506	EP 1986-112830	19860917
	EP 220463	A3	19890524		
	EP 220463	B1	19920102		
	R: AT, BE, CH, DE, FR, GB, IT, LI, NL, SE				
	AT 71131	E	19920115	AT 1986-112830	19860917
	FI 8603893	A	19870329	FI 1986-3893	19860926
	JP 62074987	A2	19870406	JP 1986-226361	19860926
	CA 1272342	A1	19900731	CA 1986-519143	19860926
	US 5190689	A	19930302	US 1991-746219	19910816
PRAI	DE 1985-3534646	19850928			
	EP 1986-112830	19860917			
	US 1986-912461	19860929			
	US 1990-566794	19900813			

AB Polymers showing a liq. crystal phase contain laterally bonded mesogenic groups in the polymer backbone. These polymers are useful as substrates in electronics for the fiber- and film techniques, for amplitude and frequency modulation of laser beams, and for optical data recording. 2-(11-Methacryloyloxyundecyl)hydroquinone bis(4-hexyloxyphenyl) ester, prep'd. by esterifying 2-(11-methacryloyloxyundecyl) hydroquinone with 4-hexyloxybenzoyl chloride, was polymd. in C<sub>6</sub>H<sub>6</sub> in the presence of azobisisobutyronitrile to give a polymer showing a stable liq. cryst. phase.



IN Hanyu, Yukio  
PA Canon Kabushiki Kaisha, Japan  
SO Eur. Pat. Appl., 21 pp.  
CODEN: EPXXDW

DT Patent  
LA English  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1081207	A1	20010307	EP 2000-307524	20000831
		R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO			
	JP 2001139389	A2	20010522	JP 2000-256835	20000828
PRAI	JP 1999-245703		19990831		
	JP 2000-256835		20000828		

AB An org. single-cryst. film usable as a functional film in various devices is produced by selecting a liq. crystal material having a good mol. alignment regularity, disposing the liq. crystal material between a pair of boundaries exerting a thickness regulating force and solidifying the liq. crystal material while imparting a mol. alignment order by phase transition from a liq. crystal phase. The liq. crystal material may preferably be a smectic liq. crystal material which provides a uniform mol. alignment inclusive of the direction of mol. long axis in a smectic phase.

RE.CNT 3

RE  
(1) Hercules Inc; EP 0445629 A 1991 CAPLUS  
(2) Okada, S; US 4639089 A 1987  
(3) Philips Nv; EP 0261712 A 1988 CAPLUS

REFERENCE 3

AN 133:315837 CA  
TI Liquid crystalline properties of dissymmetric molecules. IV. The substituent effect on thermal properties of nematic and smectic A phases in three aromatic ring systems with ester linkages  
AU Duan, Meili; Tasaka, Takeyasu; Okamoto, Hiroaki; Petrov, Vladimir F.; Takenaka, Shunsuke  
CS Department of Advanced Materials Science and Engineering, Faculty of Engineering, Yamaguchi University, Yamaguchi, 755-8611, Japan  
SO Liq. Cryst. (2000), 27(9), 1195-1205  
CODEN: LICRE6; ISSN: 0267-8292  
PB Taylor & Francis Ltd.  
DT Journal  
LA English  
AB The effects of substituent and ester linkage on smectic properties for some derivs. of 4-R-Ph 4-(4-octyloxybenzoyloxy)benzoates, 4-octyloxyphenyl 4-(4-R-benzylloxy)benzoates, 4-(4-octyloxybenzoyloxy)phenyl 4-R-benzoates, and 4-R-Ph 4-octyloxyphenyl terephthalates where R = OCH<sub>3</sub>, CH<sub>3</sub>, OC<sub>8</sub>H<sub>17</sub>, C<sub>8</sub>H<sub>17</sub>, halogens, CF<sub>3</sub>, OCF<sub>3</sub>, CN, NO<sub>2</sub>, etc., were studied. The thermal properties are discussed in terms of the electrostatic nature of the substituents and the relative orientation of the ester groups with respect to both terminal substituents. The substituent effect on the layer structure of the smectic A phase is also examd. by a small angle x-ray anal.

RE.CNT 36

RE  
(2) Cladis, P; Liq Cryst 1998, V24, P15 CAPLUS  
(3) Cladis, P; Liquid Crystals and Ordered Fluids 1984, V4, P203 CAPLUS  
(7) Duan, M; Bull chem Soc Jpn 1998, V71, P2735 CAPLUS  
(8) Duan, M; Liq Cryst 1999, V26, P737 CAPLUS  
(9) Fontes, E; J Phys 1986, V47, P1533 CAPLUS  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

REFERENCE 4

AN 132:341382 CA

TI Intermolecular Interactions in Crystal Structures of Isomeric Mesogens  
 with Two Ester Linkages  
 AU Tamura, Kyoko; Hori, Kayako  
 CS Grad. Sch. Humanities Sci., Ochanomizu University, Bunkyo-ku, Tokyo,  
 112-8610, Japan  
 SO Bull. Chem. Soc. Jpn. (2000), 73(4), 843-850  
 CODEN: BCSJA8; ISSN: 0009-2673  
 PB Chemical Society of Japan  
 DT Journal  
 LA English  
 AB To make clear the influence of more than one polar group on packing modes  
 of mols. and hence on liq. cryst. behavior, crystal structures were detd.  
 for 5 mesogens (I-V) with general formula  $C_nH_{2n+10}-C_6H_4-X-C_6H_4-Y-C_6H_4-$   
 $OCH_2m+1$ : I ( $n = m = 8$ ,  $X = COO$ ,  $Y = OCO$ ), II ( $n = m = 8$ ,  $X = OCO$ ,  $Y =$   
 $COO$ ), III ( $n = 8$ ,  $m = 1$ ,  $X = COO$ ,  $Y = OCO$ ), IV ( $n = 8$ ,  $m = 1$ ,  $X = OCO$ ,  $Y =$   
 $COO$ ), and V ( $n = 8$ ,  $m = 1$ ,  $X = OCO$ ,  $Y = OCO$ ). Two sym. mols. I and II, in  
 which the dipole moments cancel, have quite different crystal packings.  
 II and IV with the same core (the moiety except for chains) have similar  
 packing modes in spite of different chain lengths. These facts are  
 interpreted in terms of two factors: overlappings of planar moieties in  
 cores, formed by the conjugation of a benzene ring with the attached ester  
 linkage(s), and dipole-dipole interaction of polar groups. The crystal  
 structures are closely related to the liq. cryst. phase sequences:  
 imbricated structures (half-and-half overlapping of mols.) to the nematic  
 character and smectic-like layer structures with the smectic one.

RE.CNT 11

RE

- (1) Bondi, A; J Phys Chem 1964, V68, P441 CAPLUS
- (2) Dubois, J; Mol Cryst Liq Cryst 1978, V47, P193 CAPLUS
- (3) Hikmet, R; Macromolecules 1995, V28, P3313 CAPLUS
- (5) Sakurai, Y; J Chem Soc, Perkin Trans 2 1989, P1199 CAPLUS
- (8) Takenaka, S; Mol Cryst Liq Cryst 1990, V178, P103 CAPLUS

ALL CITATIONS AVAILABLE IN THE RE FORMAT

REFERENCE 5

AN 132:173501 CA  
 TI Film for twisted nematic liquid-crystal display device  
 IN Sato, Yasushi; Mazaki, Hitoshi; Yamanashi, Teruaki; Kobori, Yoshihiro  
 PA Nippon Mitsubishi Oil Corporation, Japan  
 SO Eur. Pat. Appl., 39 pp.  
 CODEN: EPXXDW

DT Patent  
 LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 982621	A2	20000301	EP 1999-306686	19990823
	EP 982621	A3	20000628		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2000066192	A2	20000303	JP 1998-235834	19980821
	US 6294229	B1	20010925	US 1999-378036	19990820

PRAI JP 1998-235834 19980821

AB A film improving the viewing angle of a twisted nematic liq.-crystal  
 display device is formed of a liq. crystal compn. comprising (a) a  
 polymeric liq. crystal which exhibits an optically pos. uniaxial property  
 and (b) a polycyclic compd. having a mol. wt. of not more than 1000 and a  
 plurality of alicyclic and/or arom. rings connected together through a  
 linkage chain of 0 to 4 main-chain carbon atoms bonded to different ring  
 carbon atoms, with hydrocarbon groups each having 1 to 20 carbon atoms  
 being bonded resp. to both end rings through a linkage chain of 0 to 4  
 main-chain carbon atoms. The orientation of the liq. crystal compn. is  
 also fixed.

REFERENCE 6

AN 132:17358 CA  
TI Influence of directions of two ester linkages on crystal structures of isomeric mesogens  
AU Tamura, Kyoko; Uchida, Hiroko; Hori, Kayako  
CS Graduate School of Humanities and Sciences, Ochanomizu University, Tokyo, 112-8610, Japan  
SO Mol. Cryst. Liq. Cryst. Sci. Technol., Sect. A (1999), 330, 1445-1450  
CODEN: MCLCE9; ISSN: 1058-725X  
PB Gordon & Breach Science Publishers  
DT Journal  
LA English  
AB To make clear the influence of two or more polar groups on packing modes of mols., crystal structures were detd. for isomeric mesogens with different directions of two ester linkages, C8H17O-C6H4-X-C6H4-Y-C6H4-OC8H17, where X=COO and Y=OOC for I and X = OOC and Y=COO for II. Crystallog. data are given. In crystal I, mols. are arranged so that moieties conjugated from CO to an alkoxy O atom via a benzene ring have an antiparallel arrangement, resulting in an imbricated structure. Crystal II has a lamellar structure with a small tilt, in which ester linkages of adjacent mols. come close each other. The crystal structures are closely related to the phase sequences, crystal-SmC-nematic-isotropic for I and crystal-SmC-SmA-nematic-isotropic for II.

RE.CNT 3

RE

- (1) Sheldrick, G; SHELXL93 A program for the refinement of the crystal structure 1993
- (2) Sheldrick, G; SHELXS86 A program for the solution of the crystal structure 1985
- (3) Takenaka, S; Mol Cryst Liq Cryst 1990, V178, P103 CAPLUS

REFERENCE 7

AN 131:286002 CA  
TI Liquid crystal control. A remarkable enhancement of both efficiency and diastereoselectivity of intramolecular thermal cycloadditions in smectic solvents  
AU Fukunaga, Kenji; Kunieda, Takehisa  
CS Faculty of Pharmaceutical Sciences, Kumamoto University, Kumamoto, 862-0972, Japan  
SO Tetrahedron Lett. (1999), 40(33), 6041-6044  
CODEN: TELEAY; ISSN: 0040-4039  
PB Elsevier Science Ltd.  
DT Journal  
LA English  
AB The uncatalyzed intramol. [4+2]cycloaddn. of 2E,7E,9(E)-decatrienoates, conducted at 140.degree.C in a medium of smectic liq. crystals proceeds with a remarkably high level of chem. efficiency and diastereoselectivity, in contrast to the isotropic phase reactions which result in much lower yield and selectivity. The solvents thus compared were cyclohexanecarboxylic acid (4-pentyloxy)phenyl ester (isotropic), trans-1,4-cyclohexanedicarboxylic acid bis(4-pentyloxy)phenyl ester (smectic) and trans-1,4-cyclohexanedicarboxylic acid bis(4-octyloxy)phenyl ester (smectic), trans-1,4-cyclohexylene bis(4-butoxybenzoate) (nematic) and 4-(octyloxy)benzoic acid 1,4-phenylene ester (nematic).

RE.CNT 31

RE

- (4) De Maria, P; J Am Chem Soc 1984, V106, P653 CAPLUS
- (5) Dewar, M; J Am Chem Soc 1970, V92, P1582 CAPLUS
- (6) Dewar, M; J Am Chem Soc 1974, V96, P460 CAPLUS
- (7) Dondoni, A; Mol Cryst Liq Cryst 1979, V55, P47 CAPLUS
- (9) Fukunaga, K; Tetrahedron Lett 1997, V38, P8731 CAPLUS

ALL CITATIONS AVAILABLE IN THE RE FORMAT

REFERENCE 8

AN 131:221528 CA  
TI Study of activation energy and order of reaction of some liquid crystals

AU Mundhe, P. G.  
CS Department of Chemistry, J. E. S. College, Jalna, 431 203, India  
SO J. Indian Chem. Soc. (1999), 76(5), 246-249

CODEN: JICSAH; ISSN: 0019-4522

PB Indian Chemical Society

DT Journal

LA English

AB Liq. crystals p-phenylene-di-p-alkoxybenzoate were prepd. Kissinger isothermal decompn. method was used for detn. of activation energy values of liq. crystals. Kissinger's assessment for shape index of DTA peaks was used to find the order of reaction. There is no direct relation between the C atoms in terminal methylene groups and Ea values. Order of reaction value decreases with increase in heating rate up to C atoms 10 in the terminal methylene group but beyond this the order increases or decreases.

RE.CNT 22

RE

(2) Akihiko, K; 1986 CAPLUS

(7) Kissinger, H; Anal Chem 1957, V29, P1702 CAPLUS

(8) Kissinger, H; J Res Natl Bur Std 1956, V57, P217 CAPLUS

(9) Kovalev, A; Zh Prinkl Spektrosk 1986, V44, P741 CAPLUS

(11) Larche, F; J Phys Chem 1986, V90, P707 CAPLUS

ALL CITATIONS AVAILABLE IN THE RE FORMAT

REFERENCE 9

AN 130:117698 CA

TI Thermal study of some liquid crystals

AU Mundhe, P. G.

CS Department of Chemistry, J.E.S. College, Jalna, 431 203, India

SO Asian J. Chem. (1999), 11(1), 130-136

CODEN: AJCHEW; ISSN: 0970-7077

PB Asian Journal of Chemistry

DT Journal

LA English

AB Liq. crystals p-phenylene di-p-alkoxybenzoates were prepd. The thermal study of compds. is done using four function MON-Q-derivatograph. The method suggested by S. L. Boerswa (1955) and later clarified by P. D. Garn (1965) was adopted for thermal study. Using the area of DTA peak, the calibration coeff. (g) values were evaluated and discussed. The transition temps. of nematogens having homologs were measured and their correlation with no. of C atoms in the chain discussed.

RE.CNT 21

RE

(6) Creagh, L; Proc IEEE 1973, V61, P814 CAPLUS

(9) Gray, G; Electron Lett 1973, V9, P130 CAPLUS

(11) McCaffrey, M; The Mesomorphic Behaviour of Homologues 1972, V18, P209 CAPLUS

(12) Minkin, V; Tetrahedron 1967, V23, P3651 CAPLUS

(19) Strelbel, E; US 3809656 1974 CAPLUS

ALL CITATIONS AVAILABLE IN THE RE FORMAT

REFERENCE 10

AN 125:261421 CA

TI Ferroelectric liquid crystal material usable over wide temperature range and light-modulating element

IN Matsui, Eriko; Takanashi, Hidehiko; Kataoka, Nobue; Yo, Eiho; Nito, Keiichi; Yasuda, Akio; Muraki, Katsuyuki; Okabe, Eiji; Saito, Shinichi

PA Sony Corp, Japan; Chisso Corp

SO Jpn. Kokai Tokkyo Koho, 32 pp.

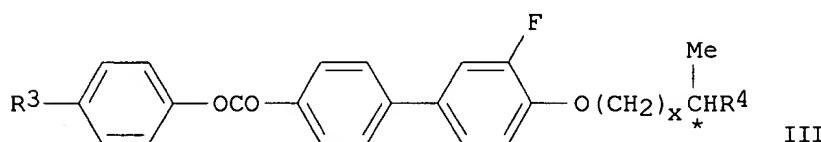
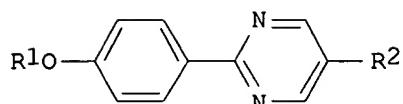
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08184796	A2	19960716	JP 1994-340084	19941228



AB The ferroelec. liq. crystal material comprises compds. represented by 10 general formula such as I-III (R1,2 = C1-18 linear or branched alkyl free of asym. carbon; R3,4 = C2-14 linear alkyl, branched alkyl, alkoxy; x = 0-8; C\* = asym. carbon). The ferroelec. liq. crystal material shows chiral smectic C phase at a temp., ranging from -41 to 74.degree.. The light-modulating element comprises the liq. crystal material in a cell assembled with transparent electrodes, orientation films, an optically transparent complex refractive index medium, and the like to wobble the optical axis of the transmitted light to a certain direction.

L7 ANSWER 12 OF 12 REGISTRY COPYRIGHT 2001 ACS

RN 1818-99-1 REGISTRY

CN Benzoic acid, 4-(hexyloxy)-, 1,4-phenylene ester (9CI) (CA INDEX NAME)

OTHER CA INDEX NAMES:

CN Benzoic acid, p-(hexyloxy)-, p-phenylene ester (7CI, 8CI)

CN Hydroquinone, bis[p-(hexyloxy)benzoate] (8CI)

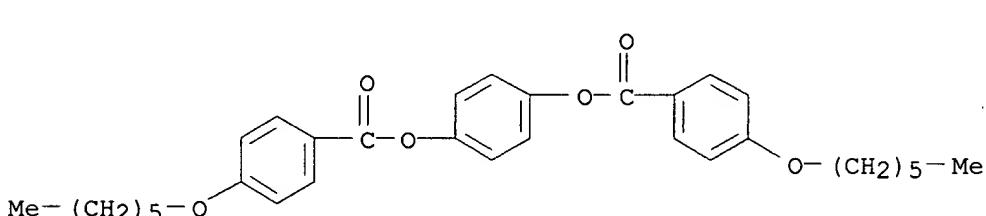
OTHER NAMES:

CN Hydroquinone-bis(4-n-hexyloxybenzoate)

FS 3D CONCORD

MF C32 H38 O6

LC STN Files: BEILSTEIN\*, CA, CAOLD, CAPLUS, CHEMCATS  
(\*File contains numerically searchable property data)



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

25 REFERENCES IN FILE CA (1967 TO DATE)

1 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA

25 REFERENCES IN FILE CAPLUS (1967 TO DATE)

1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

REFERENCE 1

AN 131:102908 CA

TI Photo-induced diffusion during the formation of liquid-crystalline networks: a powerful tool to control polymer morphology down to nanoscale level  
AU Broer, D. J.; Lub, J.; Van Nostrum, C. F.; Wienk, M. M.  
CS Philips Research Laboratories, Eindhoven, 5656AA, Neth.  
SO Recent Res. Dev. Polym. Sci. (1998), 2(Pt. 2), 313-324 ✓  
CODEN: RRDPFX  
PB Transworld Research Network  
DT Journal  
LA English  
AB Photo-initiated polymn. of liq.-cryst. [LC] monomers produces polymer films with a spatial control over the mol. organization. A powerful tool for creating even more complex mol. architectures than by LC order alone is photo-induced diffusion during polymn. of these monomers. Using UV light for initiation enables the modulation of the polymn. in space. Photomasks or holog. can modulate the light intensity in the film plane. This creates lateral concn. gradients in monomer blends based on reactivity differences and the evoking depletion of the most reactive monomer at the high intensity area. The induced diffusion causes local changes in properties. These property modulation becomes very large when during the formation of the structure a concn.-induced phase transition is passed. As an example the formation of an anisotropic holog. grating, consisting of alternating isotropic and oriented structures, is discussed. Also into the third dimension, perpendicular to the film plane, monomer diffusion can build up mol. structures during polymn. Thereto light is modulated by the use of an dye, absorbing in the same region as the photoinitiator. The diffusion leads to a gradient in properties which for instance can be utilized to enhance the bandwidth of a cholesteric reflective film by a gradient in the mol. pitch over the film thickness. Both the lateral and the normal diffusion based structures will be discussed in this chapter.

RE.CNT 34

RE

- (1) Andersson, H; Polymer 1992, V33, P4014 CAPLUS
- (2) Arslanov, V; Vysokomol Soedin Ser B 1984, V26, P208 CAPLUS
- (3) Bouligand, Y; Mol Cryst Liq Cryst 1974, V25, P233 CAPLUS
- (5) Broer, D; Cryst Liq Cryst 1995, V261, P513 CAPLUS
- (6) Broer, D; Macromolecules 1990, V23, P2474 CAPLUS

ALL CITATIONS AVAILABLE IN THE RE FORMAT

REFERENCE 2

AN 130:117698 CA  
TI Thermal study of some liquid crystals  
AU Mundhe, P. G.  
CS Department of Chemistry, J.E.S. College, Jalna, 431 203, India  
SO Asian J. Chem. (1999), 11(1), 130-136  
CODEN: AJCHEW; ISSN: 0970-7077  
PB Asian Journal of Chemistry  
DT Journal  
LA English  
AB Liq. crystals p-phenylene di-p-alkoxybenzoates were prep'd. The thermal study of compds. is done using four function MON-Q-derivatograph. The method suggested by S. L. Boerswa (1955) and later clarified by P. D. Garn (1965) was adopted for thermal study. Using the area of DTA peak, the calibration coeff. (g) values were evaluated and discussed. The transition temps. of nematogens having homologs were measured and their correlation with no. of C atoms in the chain discussed.

RE.CNT 21

RE

- (6) Creagh, L; Proc IEEE 1973, V61, P814 CAPLUS
- (9) Gray, G; Electron Lett 1973, V9, P130 CAPLUS
- (11) McCaffrey, M; The Mesomorphic Behaviour of Homologues 1972, V18, P209 CAPLUS
- (12) Minkin, V; Tetrahedron 1967, V23, P3651 CAPLUS
- (19) Strelbel, E; US 3809656 1974 CAPLUS

ALL CITATIONS AVAILABLE IN THE RE FORMAT

## REFERENCE 3

AN 118:7581 CA  
 TI Liquid-crystalline polyesters with y-shaped mesogens: phase structure peculiarities  
 AU Fischer, Hartmut; Roetz, Uwe; Lindau, Juergen; Madicke, Annelore; Kuschel, Frank  
 CS Fachbereich Chem., Martin-Luther-Univ., Halle, D-4020, Germany  
 SO Polym. Bull. (Berlin) (1992), 27(6), 657-63  
 CODEN: POBUDR; ISSN: 0170-0839  
 DT Journal  
 LA English  
 AB Liq.-cryst. (LC) main-chain polyesters with y-shaped mesogenic elements are studied by x-ray diffraction. The x-ray pattern of the glassy nematic polyester with the largest branching shows reflections in the wide angle range corresponding to the av. distance between the mols. and equatorial reflections in the small angle range, suggesting a spontaneous formation of microfibrils. X-ray patterns of the polymer at >150.degree. shows the existence of a normal nematic phase. The order-disorder model is supported by results of calorimetric measurements and mixing expts. with a low-mol.-wt. LC compd.

## REFERENCE 4

AN 115:36594 CA  
 TI Study on solution thermodynamic quantities of nitrotoluene isomers in liquid crystals with GLC  
 AU Wang, Zhenggang; Xia, Fangming; Zuo, Ming; Fu, Ruonong  
 CS Dep. Chem. Eng., Beijing Inst. Technol., Beijing, 100081, Peop. Rep. China  
 SO Huaxue Xuebao (1991), 49(2), 113-20  
 CODEN: HHHPA4; ISSN: 0567-7351  
 DT Journal  
 LA Chinese  
 AB Thermochemical results from gas-liq. chromatog. (GLC) are reported for three nonmesomorphic solutes-nitrotoluene isomers in the nematic liq. crystal phases of two solvents PBHxB (p-phenylene bis-n-hexyloxybenzoate) and PBHpB (p-phenylene bis-n-heptyloxybenzoate). The specific retention vol. can be obtained from retention time. Infinite diln. solute activity coeffs. are obtained at several temp. in two nematic phase. From these, the following solute partial molar quantities are detd. in each phase: excess enthalpy, excess Gibbs free enthalpy, excess entropy, enthalpy of soln., and entropy of soln. The results are discussed in terms of the mol. solute-solvent interactions.

## REFERENCE 5

AN 110:117926 CA  
 TI Effect of the mesomorphic-isotropic phase transition on the lubricating properties of liquid-crystalline mixtures  
 AU Barchan, G. P.; Milaev, A. G.; Gumenchuk, I. G.  
 CS NII Fokh, Rostov, USSR  
 SO Khim. Tekhnol. Topl. Masel (1988), (12), 18-19  
 CODEN: KTPMAG; ISSN: 0023-1169  
 DT Journal  
 LA Russian  
 AB The antifriction properties of liq. crystals, i.e., a eutectic mixt. of 4-methoxybenzylidene-4-butyylaniline with 4-ethoxybenzylidene-4-butyylaniline and a eutectic mixt. of butylphenyl hexyloxybenzoate and 1,4-phenylene bis(4'-hexyloxybenzoate for a bronze-steel friction couple were studied. The friction coeffs. increased 10 and 6 fold, resp., as these eutectic mixts. underwent transitions from nematic to isotropic liqs.

## REFERENCE 6

AN 108:6738 CA

TI Infrared emission spectroscopy of organic compounds  
AU Gao, Hongjin; Lu, Weiqin; Cheng, Dai  
CS Dep. Chem., Tsinghua Univ., Beijing, Peop. Rep. China  
SO Guangpuxue Yu Guangpu Fenxi (1987), 7(3), 26-32, 17  
CODEN: GYGFED  
DT Journal  
LA Chinese  
AB The Fourier-transform IR emission spectra of azo-contg. polyester and phenolic ester liq. crystals were studied using pressed KBr sandwich disk sampling technique. Relative emissivity was weakened during temp. elevation and emissivity increased sharply at phase transition points. The effect of temp. on IR emission spectra was studied.

REFERENCE 7

AN 107:227282 CA  
TI Relaxation phenomena and dipole polarization mechanisms in liquid-crystal 2-hydroquinone bis(p-hexyloxybenzoate) and 2-nitrohydroquinone bis(p-hexyloxybenzoate)  
AU Saburov, B. S.; Mallaboev, U. M.; Kovshik, A. P.; Ryumtsev, E. I.  
CS Tadzh. S-kh. Inst., Dushanbe, USSR  
SO Dokl. Akad. Nauk Tadzh. SSR (1987), 30(3), 157-61  
CODEN: DANTAL; ISSN: 0002-3469  
DT Journal  
LA Russian  
AB The dielec. const. and loss were detd. of the title liq. crystals. The results are discussed in terms of a dipole relaxation mechanism. The dielec. consts. are very anisotropic. Calcd. activation energies for mol. rotation agree with dielec. loss measurements.

REFERENCE 8

AN 106:24049 CA  
TI Thermodynamic studies on solutions of some isomers in aromatic diester liquid crystals by gas-liquid chromatography  
AU Zhou, Xiaoxian; Gong, Hua; Chen, Wufeng; Si, Junfang; Zheng, Guokang  
CS Dep. Chem., Lanzhou Univ., Lanzhou, Peop. Rep. China  
SO Wuli Huaxue Xuebao (1986), 2(5), 385-91  
CODEN: WHXUEU  
DT Journal  
LA Chinese  
AB By using the p-phenylene-di-n-alkoxybenzoate homologous series as a stationary liq., the infinite diln. activity coeffs., partial molar excess enthalpies and entropies of xylene isomers, dichlorobenzene isomers, diPh and diphenylmethane were measured in the nematic phase of 3 liq. crystals (p-alkoxy)benzoates.

REFERENCE 9

AN 104:99981 CA  
TI Specific features of the manifestation of thermal effects in liquid crystals  
AU Tinchurina, L. M.; Ovchinnikov, I. V.; Yagfarov, M. Sh.  
CS Kazan. Fiz.-Tekh. Inst., Kazan, USSR  
SO Dokl. Akad. Nauk SSSR (1985), 285(3), 668-71 [Phys. Chem.]  
CODEN: DANKAS; ISSN: 0002-3264  
DT Journal  
LA Russian  
AB The effects were studied of the rate of change of temp., heating, cooling, and thermal storage on the transitions in thermotropic liq. crystals using DSC. The heat of transition is affected by the rate of heating or cooling during its detn. The transition temp. is nearly independent of the rate of heating or cooling. This is explained in terms of the heat capacity and heat storage of the phases and the formation of ordered phases. Similar effects are obsd. in the entropy.

REFERENCE 10

AN 103:131420 CA  
TI Electric birefringence and dipole structure of liquid-crystal phenyl  
benzoate molecules  
AU Ryumtsev, E. I.; Rotinyan, T. A.; Kovshik, A. P.; Agafonov, M. A.  
CS USSR  
SO Opt. Spektrosk. (1985), 59(1), 131-6  
CODEN: OPSPAM; ISSN: 0030-4034  
DT Journal  
LA Russian  
AB A study was made of the electronic structure of mols. of a series of arom. esters, distinguished by structure of terminal groups and the formation of thermotropic liq. crystal states. The Kerr const. K, dipole moment .mu. in solns. and the optical anisotropy were exptl. measured for the detn. of direction of the dipole moment. It is exptl. noted that the use of samples with regular change of polar structure during the calcn. of their group dipole moment can be an effective method of anal. of the dipole structure of mols. of liq. crystal substances.

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L8 ANSWER 1 OF 70 CA COPYRIGHT 2001 ACS

AN 135:100184 CA

TI Liquid crystalline properties of dissymmetric molecules. Part 5. The effects of alkyl chain length and linkages on thermal properties of smectic A and C phases in three aromatic ring systems

AU Tasaka, Takeyasu; Okamoto, Hiroaki; Petrov, Vladimir F.; Takenaka, Shunsuke

CS Department of Advanced Materials Science and Engineering, Faculty of Engineering, Yamaguchi University, Yamaguchi, 755-8611, Japan

SO Mol. Cryst. Liq. Cryst. Sci. Technol., Sect. A (2001), 357, 67-84

CODEN: MCLCE9; ISSN: 1058-725X

PB Gordon & Breach Science Publishers

DT Journal

LA English

AB The effect of alkyl and alkoxy chain lengths on the thermal properties of four isomeric systems; 4-R-Ph 4-(4-octyloxybenzoyloxy)benzoates (I), 4-octyloxyphenyl 4-(4-R-benzoyloxy)benzoates (II), 4-(4-R-benzoyloxy)phenyl 4-octyloxybenzoates (III), and 4-R-Ph 4-octyloxyphenyl terephthalates (IV) (R = alkoxy, alkyl) was studied. The smectic properties for I and II are fairly different when both terminal alkyl and alkoxy groups are short, while both have the same liq. cryst. core. The homologs of III exhibit only a smectic C phase even in the higher homologs. The homologs of IV preferentially exhibit smectic A and C phases from the earlier homologs. The difference in the smectic properties are discussed in terms of their mol. characteristics.

RE.CNT 22

RE

(1) Barrall, E; Mol Cryst Liq Cryst 1979, V49, P319 CA

(7) Gray, G; Mol Cryst Liq Cryst 1976, V37, P157 CA

(13) McMillan, W; Phys Rev A 1973, V8, P1921 CA

(14) Neubert, M; Mol Cryst Liq Cryst 1977, V43, P313 CA

(16) Neubert, M; Mol Cryst Liq Cryst 1993, V237, P47 CA

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 2 OF 70 CA COPYRIGHT 2001 ACS

AN 134:215166 CA

TI Single-crystalline film and process for production thereof

IN Hanyu, Yukio

PA Canon Kabushiki Kaisha, Japan

SO Eur. Pat. Appl., 21 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	-----	-----	-----	-----
PI	EP 1081207	A1	20010307	EP 2000-307524	20000831
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2001139389	A2	20010522	JP 2000-256835	20000828
PRAI	JP 1999-245703	A	19990831		X
	JP 2000-256835	A	20000828		

AB An org. single-cryst. film usable as a functional film in various devices is produced by selecting a liq. crystal material having a good mol. alignment regularity, disposing the liq. crystal material between a pair of boundaries exerting a thickness regulating force and solidifying the liq. crystal material while imparting a mol. alignment order by phase transition from a liq. crystal phase. The liq. crystal material may preferably be a smectic liq. crystal material which provides a uniform mol. alignment inclusive of the direction of mol. long axis in a smectic phase.

RE.CNT 3

RE

(1) Hercules Inc; EP 0445629 A 1991 CA

(2) Okada, S; US 4639089 A 1987  
(3) Philips Nv; EP 0261712 A 1988 CA

✓

L8 ANSWER 3 OF 70 CA COPYRIGHT 2001 ACS  
AN 133:315837 CA  
TI Liquid crystalline properties of dissymmetric molecules. IV. The substituent effect on thermal properties of nematic and smectic A phases in three aromatic ring systems with ester linkages  
AU Duan, Meili; Tasaka, Takeyasu; Okamoto, Hiroaki; Petrov, Vladimir F.; Takenaka, Shunsuke  
CS Department of Advanced Materials Science and Engineering, Faculty of Engineering, Yamaguchi University, Yamaguchi, 755-8611, Japan  
SO Liq. Cryst. (2000), 27(9), 1195-1205  
CODEN: LICRE6; ISSN: 0267-8292  
PB Taylor & Francis Ltd.  
DT Journal  
LA English  
AB The effects of substituent and ester linkage on smectic properties for some derivs. of 4-R-Ph 4-(4-octyloxybenzoyloxy)benzoates, 4-octyloxyphenyl 4-(4-R-benzyl)benzoates, 4-(4-octyloxybenzoyloxy)phenyl 4-R-benzoates, and 4-R-Ph 4-octyloxyphenyl terephthalates where R = OCH<sub>3</sub>, CH<sub>3</sub>, OC<sub>8</sub>H<sub>17</sub>, C<sub>8</sub>H<sub>17</sub>, halogens, CF<sub>3</sub>, OCF<sub>3</sub>, CN, NO<sub>2</sub>, etc., were studied. The thermal properties are discussed in terms of the electrostatic nature of the substituents and the relative orientation of the ester groups with respect to both terminal substituents. The substituent effect on the layer structure of the smectic A phase is also examd. by a small angle x-ray anal.

RE.CNT 36

RE  
(2) Cladis, P; Liq Cryst 1998, V24, P15 CA  
(3) Cladis, P; Liquid Crystals and Ordered Fluids 1984, V4, P203 CA  
(7) Duan, M; Bull chem Soc Jpn 1998, V71, P2735 CA  
(8) Duan, M; Liq Cryst 1999, V26, P737 CA  
(9) Fontes, E; J Phys 1986, V47, P1533 CA

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 4 OF 70 CA COPYRIGHT 2001 ACS  
AN 132:341382 CA  
TI Intermolecular Interactions in Crystal Structures of Isomeric Mesogens with Two Ester Linkages  
AU Tamura, Kyoko; Hori, Kayako  
CS Grad. Sch. Humanities Sci., Ochanomizu University, Bunkyo-ku, Tokyo, 112-8610, Japan  
SO Bull. Chem. Soc. Jpn. (2000), 73(4), 843-850  
CODEN: BCSJA8; ISSN: 0009-2673  
PB Chemical Society of Japan  
DT Journal  
LA English  
AB To make clear the influence of more than one polar group on packing modes of mols. and hence on liq. cryst. behavior, crystal structures were detd. for 5 mesogens (I-V) with general formula C<sub>n</sub>H<sub>2n+10</sub>-C<sub>6</sub>H<sub>4</sub>-X-C<sub>6</sub>H<sub>4</sub>-Y-C<sub>6</sub>H<sub>4</sub>-OC<sub>m</sub>H<sub>2m+1</sub>: I (n = m = 8, X = COO, Y = OCO), II (n = m = 8, X = OCO, Y = COO), III (n = 8, m = 1, X = COO, Y = OCO), IV (n = 8, m = 1, X = OCO, Y = COO), and V (n = 8, m = 1, X = OCO, Y = OCO). Two sym. mols. I and II, in which the dipole moments cancel, have quite different crystal packings. II and IV with the same core (the moiety except for chains) have similar packing modes in spite of different chain lengths. These facts are interpreted in terms of two factors: overlappings of planar moieties in cores, formed by the conjugation of a benzene ring with the attached ester linkage(s), and dipole-dipole interaction of polar groups. The crystal structures are closely related to the liq. cryst. phase sequences: imbricated structures (half-and-half overlapping of mols.) to the nematic character and smectic-like layer structures with the smectic one.

RE.CNT 11

RE  
(1) Bondi, A; J Phys Chem 1964, V68, P441 CA  
(2) Dubois, J; Mol Cryst Liq Cryst 1978, V47, P193 CA

(3) Hikmet, R; Macromolecules 1995, V28, P3313 CA  
 (5) Sakurai, Y; J Chem Soc, Perkin Trans 2 1989, P1199 CA  
 (8) Takenaka, S; Mol Cryst Liq Cryst 1990, V178, P103 CA  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 5 OF 70 CA COPYRIGHT 2001 ACS

AN 132:173501 CA

TI Film for twisted nematic liquid-crystal display device  
 IN Sato, Yasushi; Mazaki, Hitoshi; Yamanashi, Teruaki; Kobori, Yoshihiro  
 PA Nippon Mitsubishi Oil Corporation, Japan  
 SO Eur. Pat. Appl., 39 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 982621	A2	20000301	EP 1999-306686	19990823
	EP 982621	A3	20000628	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO	JP 2000066192 A2 20000303 JP 1998-235834 19980821
PRAI	US 6294229	B1	20010925	US 1999-378036	19990820
	JP 1998-235834	A	19980821		

AB A film improving the viewing angle of a twisted nematic liq.-crystal display device is formed of a liq. crystal compn. comprising (a) a polymeric liq. crystal which exhibits an optically pos. uniaxial property and (b) a polycyclic compd. having a mol. wt. of not more than 1000 and a plurality of alicyclic and/or arom. rings connected together through a linkage chain of 0 to 4 main-chain carbon atoms bonded to different ring carbon atoms, with hydrocarbon groups each having 1 to 20 carbon atoms being bonded resp. to both end rings through a linkage chain of 0 to 4 main-chain carbon atoms. The orientation of the liq. crystal compn. is also fixed.

L8 ANSWER 6 OF 70 CA COPYRIGHT 2001 ACS

AN 132:17358 CA

TI Influence of directions of two ester linkages on crystal structures of isomeric mesogens

AU Tamura, Kyoko; Uchida, Hiroko; Hori, Kayako

CS Graduate School of Humanities and Sciences, Ochanomizu University, Tokyo, 112-8610, Japan

SO Mol. Cryst. Liq. Cryst. Sci. Technol., Sect. A (1999), 330, 1445-1450

CODEN: MCLCE9; ISSN: 1058-725X

PB Gordon & Breach Science Publishers

DT Journal

LA English

AB To make clear the influence of two or more polar groups on packing modes of mols., crystal structures were detd. for isomeric mesogens with different directions of two ester linkages, C8H17O-C6H4-X-C6H4-Y-C6H4-OC8H17, where X=COO and Y=OOC for I and X = OOC and Y=COO for II. Crystallog. data are given. In crystal I, mols. are arranged so that moieties conjugated from CO to an alkoxy O atom via a benzene ring have an antiparallel arrangement, resulting in an imbricated structure. Crystal II has a lamellar structure with a small tilt, in which ester linkages of adjacent mols. come close each other. The crystal structures are closely related to the phase sequences, crystal-SmC-nematic-isotropic for I and crystal-SmC-SmA-nematic-isotropic for II.

RE.CNT 3

RE

- (1) Sheldrick, G; SHELXL93 A program for the refinement of the crystal structure 1993
- (2) Sheldrick, G; SHELXS86 A program for the solution of the crystal structure 1985
- (3) Takenaka, S; Mol Cryst Liq Cryst 1990, V178, P103 CA

L8 ANSWER 7 OF 70 CA COPYRIGHT 2001 ACS

AN 131:286002 CA  
TI Liquid crystal control. A remarkable enhancement of both efficiency and diastereoselectivity of intramolecular thermal cycloadditions in smectic solvents  
AU Fukunaga, Kenji; Kunieda, Takehisa  
CS Faculty of Pharmaceutical Sciences, Kumamoto University, Kumamoto, 862-0972, Japan  
SO Tetrahedron Lett. (1999), 40(33), 6041-6044  
CODEN: TELEAY; ISSN: 0040-4039  
PB Elsevier Science Ltd.  
DT Journal  
LA English  
OS CASREACT 131:286002  
AB The uncatalyzed intramol. [4+2]cycloaddn. of 2E,7E,9(E)-decatrienoates, conducted at 140.degree.C in a medium of smectic liq. crystals proceeds with a remarkably high level of chem. efficiency and diastereoselectivity, in contrast to the isotropic phase reactions which result in much lower yield and selectivity. The solvents thus compared were cyclohexanecarboxylic acid (4-pentyloxy)phenyl ester (isotropic), trans-1,4-cyclohexanedicarboxylic acid bis(4-pentyloxy)phenyl ester (smectic) and trans-1,4-cyclohexanedicarboxylic acid bis(4-octyloxy)phenyl ester (smectic), trans-1,4-cyclohexylene bis(4-butoxybenzoate) (nematic) and 4-(octyloxy)benzoic acid 1,4-phenylene ester (nematic).  
RE.CNT 31  
RE  
(4) De Maria, P; J Am Chem Soc 1984, V106, P653 CA  
(5) Dewar, M; J Am Chem Soc 1970, V92, P1582 CA  
(6) Dewar, M; J Am Chem Soc 1974, V96, P460 CA  
(7) Dondoni, A; Mol Cryst Liq Cryst 1979, V55, P47 CA  
(9) Fukunaga, K; Tetrahedron Lett 1997, V38, P8731 CA  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 8 OF 70 CA COPYRIGHT 2001 ACS  
AN 131:221528 CA  
TI Study of activation energy and order of reaction of some liquid crystals  
AU Mundhe, P. G.  
CS Department of Chemistry, J. E. S. College, Jalna, 431 203, India  
SO J. Indian Chem. Soc. (1999), 76(5), 246-249  
CODEN: JICSAH; ISSN: 0019-4522  
PB Indian Chemical Society  
DT Journal  
LA English  
AB Liq. crystals p-phenylene-di-p-alkoxybenzoate were prep'd. Kissinger isothermal decompn. method was used for detn. of activation energy values of liq. crystals. Kissinger's assessment for shape index of DTA peaks was used to find the order of reaction. There is no direct relation between the C atoms in terminal methylene groups and Ea values. Order of reaction value decreases with increase in heating rate up to C atoms 10 in the terminal methylene group but beyond this the order increases or decreases.  
RE.CNT 22  
RE  
(2) Akihiko, K; 1986 CA  
(7) Kissinger, H; Anal Chem 1957, V29, P1702 CA  
(8) Kissinger, H; J Res Natl Bur Std 1956, V57, P217 CA  
(9) Kovalev, A; Zh Prinkl Spektrosk 1986, V44, P741 CA  
(11) Larche, F; J Phys Chem 1986, V90, P707 CA  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 9 OF 70 CA COPYRIGHT 2001 ACS  
AN 131:102908 CA  
TI Photo-induced diffusion during the formation of liquid-crystalline networks: a powerful tool to control polymer morphology down to nanoscale level  
AU Broer, D. J.; Lub, J.; Van Nostrum, C. F.; Wienk, M. M.  
CS Philips Research Laboratories, Eindhoven, 5656AA, Neth.  
SO Recent Res. Dev. Polym. Sci. (1998), 2(Pt. 2), 313-324  
CODEN: RRDPAF

PB Transworld Research Network

DT Journal

LA English

AB Photo-initiated polymn. of liq.-cryst. [LC] monomers produces polymer films with a spatial control over the mol. organization. A powerful tool for creating even more complex mol. architectures than by LC order alone is photo-induced diffusion during polymn. of these monomers. Using UV light for initiation enables the modulation of the polymn. in space. Photomasks or holog. can modulate the light intensity in the film plane. This creates lateral concn. gradients in monomer blends based on reactivity differences and the evoking depletion of the most reactive monomer at the high intensity area. The induced diffusion causes local changes in properties. These property modulation becomes very large when during the formation of the structure a concn.-induced phase transition is passed. As an example the formation of an anisotropic holog. grating, consisting of alternating isotropic and oriented structures, is discussed. Also into the third dimension, perpendicular to the film plane, monomer diffusion can build up mol. structures during polymn. Thereto light is modulated by the use of an dye, absorbing in the same region as the photoinitiator. The diffusion leads to a gradient in properties which for instance can be utilized to enhance the bandwidth of a cholesteric reflective film by a gradient in the mol. pitch over the film thickness. Both the lateral and the normal diffusion based structures will be discussed in this chapter.

RE.CNT 34

RE

- (1) Andersson, H; Polymer 1992, V33, P4014 CA
- (2) Arslanov, V; Vysokomol Soedin Ser B 1984, V26, P208 CA
- (3) Bouligand, Y; Mol Cryst Liq Cryst 1974, V25, P233 CA
- (5) Broer, D; Cryst Liq Cryst 1995, V261, P513 CA
- (6) Broer, D; Macromolecules 1990, V23, P2474 CA

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 10 OF 70 CA COPYRIGHT 2001 ACS

AN 130:117698 CA

TI Thermal study of some liquid crystals

AU Mundhe, P. G.

CS Department of Chemistry, J.E.S. College, Jalna, 431 203, India

SO Asian J. Chem. (1999), 11(1), 130-136

CODEN: AJCHEW; ISSN: 0970-7077

PB Asian Journal of Chemistry

DT Journal

LA English

AB Liq. crystals p-phenylene di-p-alkoxybenzoates were prep'd. The thermal study of compds. is done using four function MON-Q-derivatograph. The method suggested by S. L. Boerswa (1955) and later clarified by P. D. Garn (1965) was adopted for thermal study. Using the area of DTA peak, the calibration coeff. (g) values were evaluated and discussed. The transition temps. of nematogens having homologs were measured and their correlation with no. of C atoms in the chain discussed.

RE.CNT 21

RE

- (6) Creagh, L; Proc IEEE 1973, V61, P814 CA
- (9) Gray, G; Electron Lett 1973, V9, P130 CA

(11) McCaffrey, M; The Mesomorphic Behaviour of Homologues 1972, V18, P209 CA

(12) Minkin, V; Tetrahedron 1967, V23, P3651 CA

(19) Strelbel, E; US 3809656 1974 CA

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 11 OF 70 CA COPYRIGHT 2001 ACS

AN 128:102672 CA

TI Biaxiality phenomenon in molecular properties of comb LC polymer with lateral structure: first evidence

AU Lavrenko, Peter; Yevlampiyeva, Natalia; Finkelmann, Heino

CS Institute of Macromolecular Compounds, Russian Academy of Sciences, St. Petersburg, 199004, Russia

SO Mol. Cryst. Liq. Cryst. Sci. Technol., Sect. A (1997), 299, 259-264

PB CODEN: MCLCE9; ISSN: 1058-725X  
DT Gordon & Breach Science Publishers  
LA Journal  
AB English  
AB Dynamooptical and electrooptical properties have been investigated in dil. solns. for comb-like LC polymer with mesogenic groups laterally attached by middle point to the macromol. backbone via flexible spacer. For polymer soln. in chloroform, the T-range was found where the Kerr const. K is increasing (in abs. value) with increasing T while the shear optical coeff.  $[n]/[\eta]$  remains invariable. This reflects the intramol. parking of the mesogen dipole axes with keeping the same order in mesogen optical axes. Dipole axis of the mesogenic group in the chain of this polymer is known to form a large angle with the optical one. Hence, the result can be explained by change in the mesogen short axes parking with the invariable long axes one. By other words, as evidence for present biaxiality phenomenon in mol. properties of the polymer.

L8 ANSWER 12 OF 70 CA COPYRIGHT 2001 ACS  
AN 128:48764 CA  
TI Synthesis and characterization of a series of liquid crystal polymers with X-shaped two-dimensional mesogenic units  
AU Li, Z. f.; Li, L.; Zhang, S. Y.; Cao, S. K.; Zhou, Q. F.  
CS Department of Materials Engineering, Zhengzhou University, Zhengzhou, 450052, Peop. Rep. China  
SO Polym. Adv. Technol. (1997), 8(11), 674-682  
CODEN: PADTE5; ISSN: 1042-7147  
PB John Wiley & Sons Ltd.  
DT Journal  
LA English  
AB Liq. crystal polymers (LCPs) with X-shaped two-dimensional mesogenic units were prep'd. via low temp. soln. polycondensation of 4,4'-(.alpha.,.omega.-alkylenedioxyloxy)dibenzoyl dichlorides and 2,5-bis(p-alkoxybenzoyloxy)-hydroquinones. The liq. cryst. behavior of the polymers was studied using DSC, polarized microscopy and x-ray diffraction. All the polymers show nematic thermotropic liq. cryst. structure, the melting temp. Tm and isotropization temp. Ti vary with the length of the flexible spacer and of the side groups. In the liq. crystal phase, a threaded texture was obsd. for the quinone and hydroquinone moieties, and a nematic schlieren texture with a high strength singularity was also obsd. in the hydroquinone polymers.

L8 ANSWER 13 OF 70 CA COPYRIGHT 2001 ACS  
AN 127:332041 CA  
TI Rheology and Shear Orientation of a Nematic Liquid Crystalline Side-Group Polymer with Laterally Attached Mesogenic Units  
AU Berghausen, Joerg; Fuchs, Joachim; Richtering, Walter  
CS Institut fuer Makromolekulare Chemie, Albert-Ludwigs-Universitaet Freiburg i. Br., Freiburg, D-79104, Germany  
SO Macromolecules (1997), 30(24), 7574-7581  
CODEN: MAMOBX; ISSN: 0024-9297  
PB American Chemical Society  
DT Journal  
LA English  
AB The shear orientation of a nematic side-group liq. cryst. polymer (SG-LCP) with side-on fixed mesogenic units was investigated by means of rheo-birefringence and rheo-small angle light scattering. Rheol. properties of the polymer depend on mol. wt. Macroscopically aligned samples were obtained in creep expts., but the orientation was destroyed by oscillatory shear flow. The shear modulus of a low molar mass sample in the nematic and isotropic phase superposed to a common master curve. The low-frequency modulus of a high molar mass sample, however, decreased at the phase transition, and time-temp. superposition was not possible. Preshearing led to a further decrease of the modulus. Rheo-birefringence measurements revealed a clear influence of molar mass on both the final value and the orientation state after cessation of shear. Rheo-small angle light scattering also showed a strong influence of mol. wt. In polarizing microscopy, a banded texture was obsd. with a high molar mass

sample. The polymer showed a pronounced pretransitional behavior. This regime slightly above the phase transition revealed a strong decoupling between the polymer backbone and the mesogens. Different relaxation times were found for creep recovery and birefringence, resp.

L8 ANSWER 14 OF 70 CA COPYRIGHT 2001 ACS

AN 127:241045 CA

TI Polymeric material for liquid crystal/polymer composite film, liquid crystal/polymer composite film, record display medium, and use thereof

IN Saito, Wataru; Baba, Atsushi; Shindo, Tadafumi; Shimada, Naoki; Ozawa, Hidetoshi; Kinase, Yoshinori; Kajiyama, Tisato; Imamura, Yasuhiro; Kaiya, Norihiro; Goto, Yoshitaka

PA Dai Nippon Printing Co., Ltd., Japan

SO Eur. Pat. Appl., 37 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 790289	A1	19970820	EP 1997-102236	19970212
	EP 790289	B1	20010905		
	R: DE, FR, GB				
	JP 09218398	A2	19970819	JP 1996-49445	19960213
	US 5851422	A	19981222	US 1997-797138	19970210
PRAI	JP 1996-49445	A	19960213		

OS MARPAT 127:241045

AB A record display medium is provided which can offer a high display contrast and is less likely to cause a lowering of contrast or disappearance of display even in low temp. and high temp. regions. A polymeric material for a liq. crystal/polymer composite film comprising a liq. crystal present in a polymer matrix, a liq. crystal/polymer composite film using the material, and use of the record display medium are also provided. The polymeric material for a liq. crystal/polymer composite film comprising a liq. crystal present in a polymer matrix has a glass transition temp. of 150.degree. or above and is insol. in water.

L8 ANSWER 15 OF 70 CA COPYRIGHT 2001 ACS

AN 126:200048 CA

TI Temperature dependence of the Maxwell effect in solution of a comblike polymer with a lateral macromolecular structure

AU Lavrenko, P. N.; Finkelmann, H.

CS Inst. Macromol. Compd., Russ. Acad. Sci., St.-Petersburg, 199004, Russia

SO Vysokomol. Soedin., Ser. A Ser. B (1996), 38(11), 1913-1916

CODEN: VSSBEE

PB MAIK Nauka

DT Journal

LA Russian

AB A comblike polymer contg. three-ring mesogenic groups attached laterally (in the middle part) via 11-carbon spacers to the methacrylic core was investigated. The effect of temp. on the optical Maxwell const., the optical anisotropy per unit chain length, and the orientational ordering of mesogenic groups was studied. An increase in the temp. from 13 to 45.degree.C produces a two-fold decrease in the characteristic birefringence appearing in the flow of a polymer soln. in chloroform. At the same time, the optical shear coeff. remains unchanged, showing that the optical anisotropy of the statistical segment and the unit chain length are insensitive to the temp. variations. The parameter of order in the side group arrangement is detd. In the chloroform solns., the order parameter is several times higher than that in tetrachloromethane and does not vary with temp.

L8 ANSWER 16 OF 70 CA COPYRIGHT 2001 ACS

AN 126:200045 CA

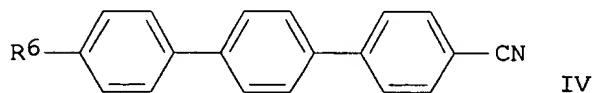
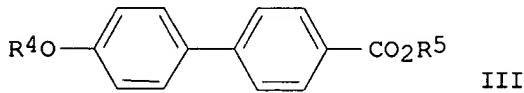
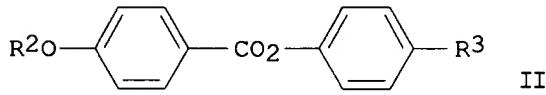
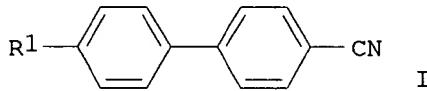
TI Temperature dependence of the hydrodynamic properties of a comblike liquid-crystalline polymer with a lateral macromolecular structure

AU Lavrenko, P. N.; Okatova, O. V.; Korneeva, E. V.; Finkelmann, H.

CS Inst. Macromol. Compd., Russ. Acad. Sci., St.-Petersburg, 199004, Russia  
 SO Vysokomol. Soedin., Ser. A Ser. B (1996), 38(11), 1845-1850  
 CODEN: VSSBEE  
 PB MAIK Nauka  
 DT Journal  
 LA Russian  
 AB Characteristic viscosity [.eta.], sedimentation coeff. s, and diffusion coeff. D were detd. for benzene and chloroform solns. of a comblike polymer contg. three-ring mesogenic groups attached laterally (in the middle part) via 11-carbon spacers to the methacrylic core. Expts. were conducted at 7-73.degree.. The temp. viscosity coeff.  $d\ln[\eta]/dT$  was -0.007 K-1 in chloroform and +0.005 K-1 in benzene. For solns. characterized by mol. dispersion, an increase in temp. is accompanied by more pronounced excluded vol. effects in benzene, but less pronounced excluded vol. effects in chloroform. A decrease of equil. polymer chain rigidity was obsd. with increasing temp.; this effect was more pronounced in benzene solns.

L8 ANSWER 17 OF 70 CA COPYRIGHT 2001 ACS  
 AN 126:111120 CA  
 TI Smectic liquid crystal composition for display device  
 IN Baba, Atsushi; Saito, Wataru; Nishiyama, Isa; Yoshizawa, Atsushi  
 PA Dai Nippon Printing Co., Ltd., Japan; Japan Energy Corporation  
 SO Eur. Pat. Appl., 19 pp.  
 CODEN: EPXXDW  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 743350	A1	19961120	EP 1996-108027	19960520
	EP 743350	B1	20010829		
	R: BE, CH, DE, ES, FR, GB, IT, LI, NL				
	JP 09040959	A2	19970210	JP 1996-49444	19960213
	US 5932137	A	19990803	US 1996-647822	19960515
	CN 1141329	A	19970129	CN 1996-110015	19960518
PRAI	JP 1995-144239	A	19950519		
	JP 1996-49444	A	19960213		
OS	MARPAT 126:111120				
GI					



AB A smectic liq. crystal compn. is provided which can offer a high display contrast and is less likely to cause a lowering of contrast or disappearance of display even in low temp. and high temp. regions. The liq. crystal compn. comprises at least one compd. selected from the group consisting of compds. represented by the formula I wherein R1 represents an alkyl or alkoxy group having 8-18 carbon atoms and at least one compd. selected from the group consisting of compds. represented by the formulas II-IV wherein R2, R4-6 represent alkyl groups having 2-18 carbon atoms and R3 represents an alkyl or alkoxy group having 2-18 carbon atoms.

L8 ANSWER 18 OF 70 CA COPYRIGHT 2001 ACS

AN 125:261421 CA

TI Ferroelectric liquid crystal material usable over wide temperature range and light-modulating element

IN Matsui, Eriko; Takanashi, Hidehiko; Kataoka, Nobue; Yo, Eiho; Nito, Keiichi; Yasuda, Akio; Muraki, Katsuyuki; Okabe, Eiji; Saito, Shinichi

PA Sony Corp, Japan; Chisso Corp

SO Jpn. Kokai Tokkyo Koho, 32 pp.

CODEN: JKXXAF

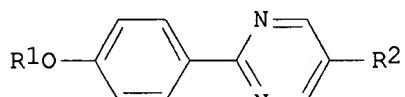
DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08184796	A2	19960716	JP 1994-340084	19941228
OS	MARPAT 125:261421				

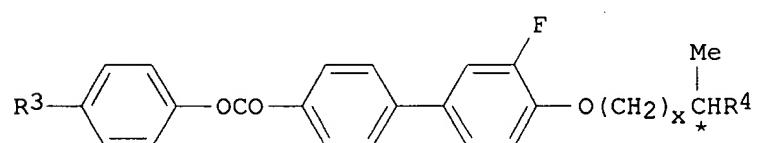
GI



I



II



III

AB The ferroelec. liq. crystal material comprises compds. represented by 10 general formula such as I-III (R1,2 = C1-18 linear or branched alkyl free of asym. carbon; R3,4 = C2-14 linear alkyl, branched alkyl, alkoxy; x = 0-8; C\* = asym. carbon). The ferroelec. liq. crystal material shows chiral smectic C phase at a temp., ranging from -41 to 74.degree.. The light-modulating element comprises the liq. crystal material in a cell assembled with transparent electrodes, orientation films, an optically transparent complex refractive index medium, and the like to wobble the optical axis of the transmitted light to a certain direction.

L8 ANSWER 19 OF 70 CA COPYRIGHT 2001 ACS

AN 125:235002 CA

TI Helical twisting power of laterally aryl substituted chiral mesogens

AU Stuetzer, C.; Weissflog, W.; Stegemeyer, H.

CS Research Group Liquid Crystal Systems, Max-Planck-Society, Halle, 06108, Germany

SO Liq. Cryst. (1996), 21(4), 557-563

CODEN: LICRE6; ISSN: 0267-8292

DT Journal

LA English

AB The relation between the helical twisting power (HTP) of cholesteric liq. crystals and the mol. structure of the chiral mesogens was studied. Rod-like mesogens are compared with analogs bearing a bulky lateral branch. Addnl., the HTP of induced cholesteric phases formed by chiral guest mols. in nematic host phases was studied in terms of different mol. structures. The paper gives information on the influence of bulky lateral groups in mesogens on the HTP.

L8 ANSWER 20 OF 70 CA COPYRIGHT 2001 ACS

AN 121:268403 CA

TI Pretransitional behavior of a nematic liquid crystal in the isotropic phase

AU Fuchs, J.; Burchard, W.

CS Inst. Macromolecular Chem., Univ. Freiburg, Freiburg, 79104, Germany

SO J. Phys. II (1994), 4(9), 1451-6

CODEN: JPAHER; ISSN: 1155-4312

DT Journal

LA English

AB Polarized and depolarized light scattering measurements were performed from a nematic liq. cryst. in the isotropic region, approaching the nematic phase transition. A crit. static scattering intensity and a crit. slowing-down of the orientational fluctuations were obsd. in a temp. range of .apprx.10.degree. above the phase transition which followed a  $(T-T_c^*)^{-\gamma}$  dependence, but with an exponent slightly smaller than unity. The angular dependence of the polarized static scattering intensity differed in behavior from other liq. crystals by the occurrence of a strong excess scattering at small scattering angles. These observations give evidence for spatial structural heterogeneities, spherical in shape and optically isotropic, in a bath of a nematic liq. cryst. system. This conclusion is confirmed by dynamic light scattering where in addn. a slow mode appeared in the time correlation function which results from random migration of these heterogeneities.

L8 ANSWER 21 OF 70 CA COPYRIGHT 2001 ACS

AN 120:192774 CA

TI Morphological studies of oriented specimens of thermotropic liquid-crystalline polyesters with two-dimensional mesogenic units

AU Hou, Jianan; Wu, Wei; Shen, Deyan; Xu, Mao; Li, Zifa

CS Inst. Chem., Acad. Sin., Beijing, 100080, Peop. Rep. China

SO Polymer (1994), 35(4), 699-705

CODEN: POLMAG; ISSN: 0032-3861

DT Journal

LA English

AB Morphol. studies have been carried out in detail by means of DSC, polarizing and scanning electron microscopies, small-angle light scattering, X-ray diffraction, IR spectroscopy and refractive-index measurements for oriented specimens of thermotropic liq.-cryst. polyesters with so-called two-dimensional mesogenic units along the polymer chains, which were synthesized by soln. polycondensation of the monomers 4,4'-(alkylene dioxydioxo)dibenzoyl dichloride and 2,5-dihydroxyl-1,4-phenylene di-p-alkyloxybenzoate at low temps. All the studied polyesters exhibited nematic liq.-cryst. behavior above their m.ps. Mat-like or banded textures have been obsd. in oriented films of these specimens, which were prepnd. by shearing in the mesomorphic state and subsequent quenching to room temp. The three specimens had different mol. wts., and such differences were found to influence strongly the features and ease of formation of the banded structure: the bandwidth was decreased and band quality was improved with increasing mol. wt. Furthermore, bandwidth could also be changed sensitively on varying the shearing rate during prepns. of oriented specimens. In one case, the orientation direction of fibrils aggregated by polymer chains was found to deviate from the shearing direction alternately by a deviation angle of about  $\pm 30^\circ$ , on going from band to band. The zigzag planes of oriented fibrils, which have av. diam. ranging from 50 to 100 nm, are parallel or

nearly parallel to the specimen surface, and they are stacked layer-like along the specimen thickness direction. The planes including the intersected X-shaped mesogens may be oriented parallel or nearly parallel to the zigzag plane or film surface, and all the phenylene rings tend to orient their planes parallel to the zigzag plane as a whole. The banded texture and its interior structure were quite thermally stable even at temps. somewhat higher than the isotropization point of the unoriented polymer, suggesting that the thermal motions of individual polymer chains are severely limited and do not easily destroy the fibrillar structure and other supermol. structures formed in the process of prep. oriented films.

L8 ANSWER 22 OF 70 CA COPYRIGHT 2001 ACS

AN 120:135765 CA

TI Dynamic and electric birefringence in solutions of a comb-shaped polymer with mesogenic side groups

AU Kolomiets, I. P.; Lavrenko, P. N.; Lezov, A. V.; Ovsipyan, A. M.; Finkelmann, H.

CS St. Petersburg State Univ., St. Petersburg, 198904, Russia

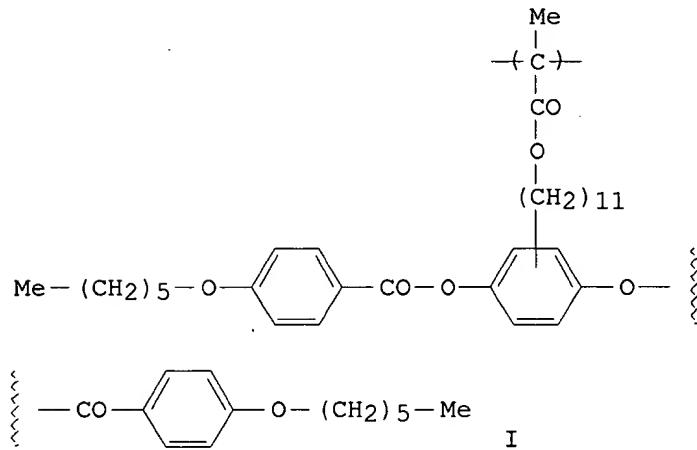
SO Vysokomol. Soedin., Ser. A (1993), 35(10), 1620-4

CODEN: VYSAAF; ISSN: 0507-5475

DT Journal

LA Russian

GI



AB Flow and elec. birefringence of solns. of comb-shaped methacrylic polymer with a mesogenic side group contg. 3 p-phenylene rings and aliph.  $(CH_2)_{11}$  spacers in  $CCl_4$  were studied. The birefringence of I in the liq. cryst. state was measured. Optical shear coeff. and specific Kerr const. were detd.; optical anisotropy of the Kuhn statistical segment  $\Delta\alpha_s = -(220 \pm 30) \times 10^{-25} \text{ cm}^3$  and of the mesogen  $\Delta\alpha_b = 230 \times 10^{-25} \text{ cm}^3$  were calcd. The parameter of orientation order of mesogen groups in an isolated macromol. is near 0.

L8 ANSWER 23 OF 70 CA COPYRIGHT 2001 ACS

AN 120:135551 CA

TI Hydrodynamic properties and conformational characteristics of macromolecules with lateral mesogenic side groups

AU Lavrenko, P. N.; Finkelmann, H.; Okatova, O. V.; Korneeva, E. V.; Shtibal-Fischer, E.

CS Inst. Macromol. Comp., St. Petersburg, 199004, Russia

SO Vysokomol. Soedin., Ser. A (1993), 35(10), 1652-8

CODEN: VYSAAF; ISSN: 0507-5475

DT Journal

LA Russian

AB Hydrodynamic properties of a comb-shaped polymethacrylate with lateral mesogenic groups with mesogens attached to the backbone via their center of gravity with an aliph.  $(CH_2)_{11}$  spacer were studied in dil.  $C_6H_6$  solns.

In the range of mol. wts. (M) from 5.7 .times. 105 to 3.02 .times. 106 in a thermodynamically good solvent (C6H6) the sedimentation coeff. (s0), diffusion coeff. (DA), and intrinsic viscosity [.eta.] was related to M by the following relationship  $s_0 = 6.8 \cdot 10^{-15} M^{0.40}$  (s),  $DA = 8.0 \cdot 10^{-5} M^{0.60}$  (cm<sup>2</sup>/s), and [.eta.] = 1.25 .times. 10<sup>-3</sup> M<sup>0.77</sup> (cm<sup>3</sup>/g), resp. The unperturbed macromol. length characterized by the Kuhn segment was A = 70 .+-. 10 .ANG.. And the chains exhibited high degree of hindrance of rotation around the valence bonds of the main chain (.sigma. = 4.2). Volumetric effects of the liq.-cryst. polymethacrylate in C6H6 solns. are discussed.

L8 ANSWER 24 OF 70 CA COPYRIGHT 2001 ACS  
AN 120:42435 CA  
TI High pressure differential thermal analysis of laterally substituted nematic liquid crystalline compounds  
AU Rein, C.; Demus, D.  
CS Dep. Exp. Phys., Univ. Umea, Umea, S-90187, Swed.  
SO Liq. Cryst. (1993), 15(2), 193-202  
CODEN: LICRE6; ISSN: 0267-8292  
DT Journal  
LA English  
AB By high pressure thermal anal. the authors measured the pressure dependence of the clearing temps. of nematic, 2-substituted hydroquinone-bis-(4-substituted benzoates) up to pressures of .apprx.500 MPa. The clearing lines are strongly nonlinear and can be well reproduced by a modified Simon-Glatzel equation. The gradients dT/dp of the clearing lines decrease strongly with increasing pressure, indicating a pronounced decrease of the transition vol. with increasing pressure. Compds. with long chain lateral substituents exhibit liq. cryst. behavior because the lateral substituents tend to have an orientation parallel to the mol. long axes. The authors expected that the preferred orientation of the lateral substituents would be strengthened by high pressure, demonstrated by enhanced dT/dp values. However, despite the strong deviation of the compds. from the ideal rod-like shape, the magnitudes and the trend of the data are similar to those of classical nematics.

L8 ANSWER 25 OF 70 CA COPYRIGHT 2001 ACS  
AN 119:251068 CA  
TI Optical anisotropy and conformation of macromolecules with laterally attached mesogenic side groups  
AU Lavrenko, Peter N.; Kolomietz, Igor P.; Finkelmann, Heino  
CS Inst. Macromol. Compd., St. Petersburg, 199004, Russia  
SO Macromolecules (1993), 26(25), 6800-7  
CODEN: MAMOBX; ISSN: 0024-9297  
DT Journal  
LA English  
AB Hydrodynamic, dynamooptic, and electrooptic properties are investigated in dil. solns. of a methacrylate polymer with the mesogenic cores laterally attached to side groups. Dependences of hydrodynamic properties of mol. wt. 3.0-5.7 .times. 106 and excluded vol. effects are discussed. Unperturbed dimensions of the macromol. are characterized by the Kuhn segment length 70 .+-. 10 .ANG. and by the steric factor 4.2. From flow and elec. birefringence measurements in dil. soln., as well as in the liq.-cryst. phase, a shear optical coeff. and a specific Kerr const. for a polymer in soln. are obtained. The optical anisotropy of the statistical segment and the mesogen are detd. The orientational order parameter for the mesogenic cores in the isolated macromol. is near zero.

L8 ANSWER 26 OF 70 CA COPYRIGHT 2001 ACS  
AN 118:7581 CA  
TI Liquid-crystalline polyesters with y-shaped mesogens: phase structure peculiarities  
AU Fischer, Hartmut; Roetz, Uwe; Lindau, Juergen; Madicke, Annelore; Kuschel, Frank  
CS Fachbereich Chem., Martin-Luther-Univ., Halle, D-4020, Germany  
SO Polym. Bull. (Berlin) (1992), 27(6), 657-63  
CODEN: POBUDR; ISSN: 0170-0839

DT Journal  
LA English  
AB Liq.-cryst. (LC) main-chain polyesters with y-shaped mesogenic elements are studied by x-ray diffraction. The x-ray pattern of the glassy nematic polyester with the largest branching shows reflections in the wide angle range corresponding to the av. distance between the mols. and equatorial reflections in the small angle range, suggesting a spontaneous formation of microfibrils. X-ray patterns of the polymer at >150.degree. shows the existence of a normal nematic phase. The order-disorder model is supported by results of calorimetric measurements and mixing expts. with a low-mol.-wt. LC compd.

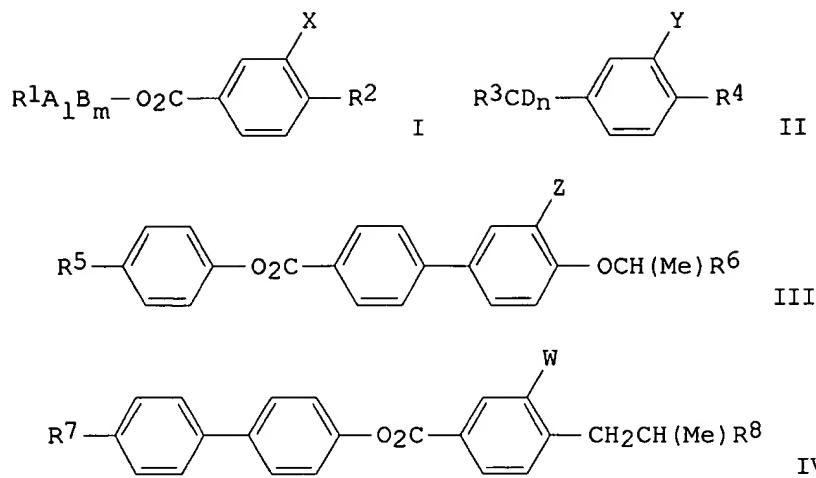
L8 ANSWER 27 OF 70 CA COPYRIGHT 2001 ACS  
AN 117:27716 CA  
TI Semidilute solutions of liquid-crystalline polymers  
AU Richtering, Walter; Gleim, Wolfgang; Burchard, Walther  
CS Inst. Makromol. Chem., Univ. Freiburg, Freiburg, D-7800, Germany  
SO Macromolecules (1992), 25(14), 3795-801  
CODEN: MAMOBX; ISSN: 0024-9297

DT Journal  
LA English  
AB The soln. properties of 2 liq.-cryst. side-chain polymers of different architecture were investigated by static and dynamic light scattering. Dil. solns. of these polymers showed common flexible chain behavior, and no indications of significant chain rigidity were obsd. In semidil. soln. the concn. dependence of the osmotic modulus revealed stronger repulsion than common linear macromols. Furthermore, a chain-length dependence was obsd. Both effects can be explained by the thickness of the polymer chain. At high concns. an excess low-angle scattering and a slow mode of motion were detected, indicating formation of large clusters. The first appearance of these clusters occurred at the same concn. for samples of different molar mass. This leads to the suggestion that attractive interactions between mesogenic groups are responsible for cluster formation. Further information on the structure of the clusters was obtained by studying fractal dimension and depolarized scattered light.

L8 ANSWER 28 OF 70 CA COPYRIGHT 2001 ACS  
AN 116:117439 CA  
TI Ferroelectric liquid-crystal compositions and light-switching elements containing them  
IN Katsuyuki, Murashiro; Kikuchi, Makoto; Terashima, Kanetsugu  
PA Chisso Corp., Japan  
SO Eur. Pat. Appl., 32 pp.  
CODEN: EPXXDW

DT Patent  
LA English  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 453309	A2	19911023	EP 1991-303543	19910419
	EP 453309	A3	19920506		
	EP 453309	B1	19950830		
	R: CH, DE, FR, GB, LI, SE				
	JP 04004290	A2	19920108	JP 1990-102815	19900420
	JP 2958046	B2	19991006		
PRAI	JP 1990-102815		19900420		
OS	MARPAT 116:117439				
GI					



AB The compns. have neg. dielec. anisotropy and comprise .gtoreq.85 wt.% components A, B, and C, being present in amts. of 10-25, 45-46, and 10-30 wt.%, resp., of the total wt. of the 3 components; component A comprises .gtoreq.1 compd. of formula I; component B comprises .gtoreq.1 compd. of formula II; and component C comprises .gtoreq.1 compd. of formulas III, IV, and R9EFGkOCH<sub>2</sub>CH(Me)O<sub>2</sub>CCH(Me)R10, where R1,R2 = C1-18 linear alkyl or alkoxy; R3,R4,R5,R7,R9 = C1-18 alkyl or alkoxy; R6,R8 = C2-18 alkyl or C1-18 alkoxy; l,m,=n,k = 0 or 1; l + m = 1 or 2; A,B,C,D,E,F,G = 1,4-phenylene, 1,4-cyclohexylene, 2,5- or 5,2-pyrimidinylene, 2,5- or 5,2-pyridinylene, 3,6-pyridazinylene, or 5,2-pyrazinylene; and X,Y,Z,W = F, Cl, Br, or CN.

L8 ANSWER 29 OF 70 CA COPYRIGHT 2001 ACS

AN 115:280989 CA

TI MNDO-studies on electro-optical properties of liquid crystalline side chain polymers

AU Budesheim, Klaus W.; Wendorff, Joachim H.

CS Inst. Darmstadt, Dtsch. Kunstst., Darmstadt, 6100, Fed. Rep. Ger.

SO J. Polym. Sci., Part A: Polym. Chem. (1991), 29(12), 1819-24

CODEN: JPACEC; ISSN: 0887-624X

DT Journal

## LA English

AB The MNDO method was used to calc. electrooptical properties, such as low-energy mol. configurations, polarizability tensors, and dipole vectors of side-chain polymethacrylates with laterally attached mesogens. The Kerr const. ( $B_0$ ) calcd. for single mols. compared favorably with the result of the MOPAC program calcns. in the order and sign but not in the abs. values, probably due to the extrapolation procedure used to obtain  $B_0$  from exptl. data and to errors in the MNDO calcns. resulting from many internal degrees of freedom of the test mols. Selected properties of side-chain liq.-cryst. polymers can be evaluated with sufficient accuracy, considering that the predictions and exptl. data are quite close to each other.

L8 ANSWER 30 OF 70 CA COPYRIGHT 2001 ACS

AN 115:36594 CA

TI Study on solution thermodynamic quantities of nitrotoluene isomers in liquid crystals with GLC

AU Wang, Zhenggang; Xia, Fangming; Zuo, Ming; Fu, Ruonong

CS Dep. Chem. Eng., Beijing Inst. Technol., Beijing, 100081, Peop. Rep. China

SO Huaxue Xuebao (1991), 49(2), 113-20

CODEN: HHPA4; ISSN: 0567-7351

DT Journal

## LA Chinese

AB Thermodn. results from gas-liq. chromatog. (GLC) are reported for three nonmesomorphic solutes-nitrotoluene isomers in the nematic liq. crystal phases of two solvents PBHxB (p-phenylene bis-n-hexyloxybenzoate) and PBH<sub>7</sub>B (p-phenylene bis-n-heptyloxybenzoate). The specific retention vol.

can be obtained from retention time. Infinite diln. solute activity coeffs. are obtained at several temp. in two nematic phase. From these, the following solute partial molar quantities are detd. in each phase: excess enthalpy, excess Gibbs free enthalpy, excess entropy, enthalpy of soln., and entropy of soln. The results are discussed in terms of the mol. solute-solvent interactions.

L8 ANSWER 31 OF 70 CA COPYRIGHT 2001 ACS  
AN 114:248177 CA  
TI Electrooptical properties of liquid-crystalline side-chain polymers with laterally attached mesogenic units  
AU Hirschmann, H.; Jungbauer, D. A.; Wolf, M.; Wendorff, J. H.; Finkelmann, H.; Hessel, F.  
CS Dtsch. Kunstst.-Inst., Darmstadt, Fed. Rep. Ger.  
SO Polym. Adv. Technol. (1990), 1(1), 93-101  
CODEN: PADTE5; ISSN: 1042-7147  
DT Journal  
LA English  
AB The electrooptical properties of side-chain liq.-cryst. polymers were investigated for the case that the mesogenic units were attached laterally rather than longitudinally to a flexible chain backbone via flexible spacer units. These polymers display unusual electrooptical properties within the isotropic phase in the neighborhood of the transition into the nematic phase. The polymers are characterized by the occurrence of a fast and a slow electrooptical response both of which show a crit. divergence of the Kerr const. and the Kerr relaxation time. In addn., they show deviations between the rise and the decay values of the Kerr consts. and in certain cases also of the Kerr relaxation times. Finally, an overshoot of the induced birefringence following a sudden stepwise increase of the applied elec. field is found for 1 of these polymers. All these features can be accounted for on the basis of a newly developed theor. approach that considers the particular dipolar and optical polarization configurations of these polymers.

L8 ANSWER 32 OF 70 CA COPYRIGHT 2001 ACS  
AN 112:208387 CA  
TI The substituent effect on the thermal stability of the smectic A phase in para-phenylene systems incorporating ester linkages  
AU Takenaka, S.; Sakurai, Y.; Takeda, H.; Ikemoto, T.; Miyake, H.; Kusabayashi, S.; Takagi, T.  
CS Fac. Eng., Osaka Univ., Suita, 565, Japan  
SO Mol. Cryst. Liq. Cryst. (1990), 178, 103-15  
CODEN: MCLCA5; ISSN: 0026-8941  
DT Journal  
LA English  
AB The thermal properties of 4-Z-Ph 4-(4-octyloxybenzoyloxy)benzoates (I), 4-octyloxyphenyl 4-(4-Z-benzoyloxy)benzoates (II), 4-(4-octyloxybenzoyloxy)phenyl 4-Z-benzoates (III) and 4-octyloxyphenyl 4-(4-Z-phenoxy carbonyl)benzoates (IV) were exmd., where the substituents (Z) are halogens, alkoxy, alkyl, formyl, acetyl, cyano, and nitro groups. The smectic properties are strongly dependent on the orientation of the ester linkages. I and IV having alkoxy and alkyl groups tend to show smectic A and C phases. II and III are intrinsically poor in smectic properties, and only a smectic C phase is formed by the long-alkoxy and alkyl derivs. Throughout the compds., the thermal stability of the smectic A phase is strongly dependent on the electrostatic nature of the substituents; i.e., both electron-donating substituents such as the methoxy and Me groups and electron-withdrawing ones such as the cyano and nitro groups, steeply lower the smectic A thermal stability, and the halogens, acetyl and formyl groups enhance it. The substituent effect on the smectic A thermal stability is correlated with the charges around the functional groups calcd. by the MNDO method. The ratios of the smectic A-nematic transition temp. to the nematic-isotropic one show an interesting correlation with Hammett's consts.  $\sigma_{\text{p}}$ .

L8 ANSWER 33 OF 70 CA COPYRIGHT 2001 ACS  
AN 112:208384 CA

TI Filled smectic A phases in binary liquid-crystalline systems of terminal-nonpolar compounds  
AU Pelzl, G.; Humke, A.; Diele, S.; Demus, D.; Weissflog, W.  
CS Sekt. Chem., Martin-Luther-Univ. Halle-Wittenberg, Halle/Saale, DDR-4010, Ger. Dem. Rep.  
SO Liq. Cryst. (1990), 7(1), 115-22  
CODEN: LICRE6; ISSN: 0267-8292  
DT Journal  
LA English  
AB Five phase diagrams are presented of binary systems in which one component is a bi-swallow tailed compd. and the second component is a compd. with pronounced nematogenic properties. The common feature of these binary systems is the induction of smectic A phases which were investigated using x-ray. The smectic A induction seems largely to be the result of specific steric interactions between the components.

L8 ANSWER 34 OF 70 CA COPYRIGHT 2001 ACS  
AN 112:67153 CA  
TI High pressure investigations of lateral substituted liquid crystalline compounds  
AU Rein, C.; Demus, D.  
CS Zentralinst. Phys. Erde, Akad. Wiss. DDR, Potsdam, Ger. Dem. Rep.  
SO Veroeff. Forschungsbereichs Geo- Kosmoswiss. (1988), 17(High Pressure Geosci. Mater. Synth.), 146-9  
CODEN: VFGKDP  
DT Journal  
LA English  
AB The effect of bulky lateral substituents on the stabilizing effect of pressure on the nematic state was studied. The trends of T<sub>co</sub> (transition temp. T<sub>c</sub> at p = 0.1 MPa) and (dp/dT)<sub>0</sub> agree with theory. At higher pressures the relative rotations remain for some substances but for those with bulky lateral groups the nematic-isotropic transition lines have the highest curvature at the highest pressures. This is attributed to strong changes of the intermol. potentials connected with a great pressure dependence of the mol. arrangement.

L8 ANSWER 35 OF 70 CA COPYRIGHT 2001 ACS  
AN 111:15478 CA  
TI Ferroelectric liquid-crystal composition  
IN Terada, Masahiro; Yoshida, Akio; Shinjo, Kenji; Uchimi, Toshiharu; Togano, Takeshi  
PA Canon K. K., Japan  
SO Eur. Pat. Appl., 52 pp.  
CODEN: EPXXDW  
DT Patent  
LA English  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	-----	-----	-----	-----
PI	EP 301602	A2	19890201	EP 1988-112467	19880801
	EP 301602	A3	19891018		
	EP 301602	B1	19920708		
	R: CH, DE, FR, GB, IT, LI, NL, SE				
	JP 01036684	A2	19890207	JP 1987-190163	19870731
	JP 06104827	B4	19941221		
	US 5478495	A	19951226	US 1994-213816	19940317
PRAI	JP 1987-190163		19870731		
	US 1988-226079		19880729		
	US 1990-492294		19900228		
	US 1991-794671		19911118		
	US 1992-957058		19921006		

AB The compn. contains .gtoreq.3 mesomorphic compds. of the formula ZCH(A)B, where Z = a mesomorphic compd. residue including a divalent 6-membered ring-contg. group capable of having a substituent; A, B are different from each other and can be Me, linear or branched (substituted) C2-18 alkyl, linear or branched C1-18 alkoxy, linear or branched C2-18 alkoxyalkyl, linear or branched C2-18 alkoxy carbonyl, linear or branched C3-18

alkoxycarbonylmethyl, Cl, Br, F, CF<sub>3</sub>, or CN; and the .gtoreq.3 compds. belong to .gtoreq.3 different series of compds. having different combinations of A and B. A liq.-crystal display cell contg. compds. of 3 different series had better response time and contrast than a cell contg. compds. of only 2 series.

L8 ANSWER 36 OF 70 CA COPYRIGHT 2001 ACS  
AN 110:117926 CA  
TI Effect of the mesomorphic-isotropic phase transition on the lubricating properties of liquid-crystalline mixtures  
AU Barchan, G. P.; Milaev, A. G.; Gumenchuk, I. G.  
CS NII Fokh, Rostov, USSR  
SO Khim. Tekhnol. Topl. Masel (1988), (12), 18-19  
CODEN: KTPMAG; ISSN: 0023-1169  
DT Journal  
LA Russian  
AB The antifriction properties of liq. crystals, i.e., a eutectic mixt. of 4-methoxybenzylidene-4-butyylaniline with 4-ethoxybenzylidene-4-butyylaniline and a eutectic mixt. of butylphenyl hexyloxybenzoate and 1,4-phenylene bis(4'-hexyloxybenzoate for a bronze-steel friction couple were studied. The friction coeffs. increased 10 and 6 fold, resp., as these eutectic mixts. underwent transitions from nematic to isotropic liqs.

L8 ANSWER 37 OF 70 CA COPYRIGHT 2001 ACS  
AN 109:161061 CA  
TI DSC study of phase transitions and substituent roles in the 1,4-phenylene di(p-substituted benzoates)  
AU Wang, Bangning; Tan, Fu; Fan, Bangdi; Mo, Wei  
CS Inst. Chem., Acad. Sin., Beijing, Peop. Rep. China  
SO Huaxue Xuebao (1988), 46(6), 517-22  
CODEN: HHHPA4; ISSN: 0567-7351  
DT Journal  
LA Chinese  
AB Five liq. crystal compds. of the substituted and unsubstituted 1,4-phenylene di(p-substituted benzoates) were prep'd. and recrystd. On the basis of the thermodn. properties of the compds. obtained by DSC, the effects of the substituents on the properties of liq. crystals are discussed. The effect of Br lateral substituent on the transition temps. of liq. crystal may not be interpreted by the broadening effect of the mol. which results in the weakening of the intermol. attraction. The decreases of the transition temps. are primarily due to entropy effects. From the considerations of mol. symmetry and the models of smectic C and nematic phases, the decreases of transition temps. caused by Br lateral substituent are discussed. The substitution of 2 CN groups at 2- and 3-positions of the central ring does not destroy the mol. symmetry and the melting temps. of 2,3-dicyano compds. are not lower than those of the corresponding parent compds. in every case. However, the melting temps. of dicyano compds. are higher, this is attributed to the strong polarity of cyano group. The decreases of clearing points caused by 2 cyano groups on the same side of the rod-like mol. are equiv. to those caused by only one cyano lateral substituent at 2-position. This situation is not different from that of 2 Me groups on opposite sides of the rod-like mol. In the case of 2,3-dicyano compds., a common trend in the nematogens was also obsd. That is to say, the alkyloxy terminal substituent also stabilizes the nematic order more than the similar alkyl terminal group does.

L8 ANSWER 38 OF 70 CA COPYRIGHT 2001 ACS  
AN 108:6738 CA  
TI Infrared emission spectroscopy of organic compounds  
AU Gao, Hongjin; Lu, Weiqin; Cheng, Dai  
CS Dep. Chem., Tsinghua Univ., Beijing, Peop. Rep. China  
SO Guangpuxue Yu Guangpu Fenxi (1987), 7(3), 26-32, 17  
CODEN: GYGFED  
DT Journal  
LA Chinese

AB The Fourier-transform IR emission spectra of azo-contg. polyester and phenolic ester liq. crystals were studied using pressed KBr sandwich disk sampling technique. Relative emissivity was weakened during temp. elevation and emissivity increased sharply at phase transition points. The effect of temp. on IR emission spectra was studied.

L8 ANSWER 39 OF 70 CA COPYRIGHT 2001 ACS

AN 107:227282 CA

TI Relaxation phenomena and dipole polarization mechanisms in liquid-crystal 2-hydroquinone bis(p-hexyloxybenzoate) and 2-nitrohydroquinone bis(p-hexyloxybenzoate)

AU Saburov, B. S.; Mallaboev, U. M.; Kovshik, A. P.; Ryumtsev, E. I.

CS Tadzh. S-kh. Inst., Dushanbe, USSR

SO Dokl. Akad. Nauk Tadzh. SSR (1987), 30(3), 157-61

CODEN: DANTAL; ISSN: 0002-3469

DT Journal

LA Russian

AB The dielec. const. and loss were detd. of the title liq. crystals. The results are discussed in terms of a dipole relaxation mechanism. The dielec. consts. are very anisotropic. Calcd. activation energies for mol. rotation agree with dielec. loss measurements.

L8 ANSWER 40 OF 70 CA COPYRIGHT 2001 ACS

AN 107:116039 CA

TI Synthesis and characterization of biaxial nematic side chain polymers with laterally attached mesogenic groups

AU Hessel, Friedrich; Herr, Rolf Peter; Finkelmann, Heino

CS Inst. Makromol. Chem., Univ. Freiburg, Freiburg, 7800, Fed. Rep. Ger.

SO Makromol. Chem. (1987), 188(7), 1597-611

CODEN: MACEAK; ISSN: 0025-116X

DT Journal

LA English

AB The synthesis and characterization of liq.-cryst. side chain polymers with mesogenic groups laterally attached to the polymer main chain were described. By variation of the terminal group, mesogenic moiety of spacer length, a change in the glass transition temp., the nematic to isotropic transformation temp. and the stability of the nematic phase could be achieved. With increasing length of terminal groups, a distinct odd-even effect of the nematic to isotropic phase transformation and also a strong decrease of the glass transition temp. was obsd. Macroscopic homeotropic alignment could be achieved in an elec. or magnetic field. Conoscopic investigation showed optical biaxial behavior of the nematic phase. A chiral nematic copolymer was the first example of a thermotropic biaxial cholesteric phase.

L8 ANSWER 41 OF 70 CA COPYRIGHT 2001 ACS

AN 107:87347 CA

TI Polymers showing liquid crystalline phases

IN Finkelmann, Heino; Hessel, Friedrich; Eidenschink, Rudolf; Krause, Joachim

PA Merck Patent G.m.b.H., Fed. Rep. Ger.

SO Ger. Offen., 12 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 3534646	A1	19870402	DE 1985-3534646	19850928
	EP 220463	A2	19870506	EP 1986-112830	19860917
	EP 220463	A3	19890524		
	EP 220463	B1	19920102		
	R: AT, BE, CH, DE, FR, GB, IT, LI, NL, SE				
	AT 71131	E	19920115	AT 1986-112830	19860917
	FI 8603893	A	19870329	FI 1986-3893	19860926
	JP 62074987	A2	19870406	JP 1986-226361	19860926
	CA 1272342	A1	19900731	CA 1986-519143	19860926
	US 5190689	A	19930302	US 1991-746219	19910816

PRAI DE 1985-3534646 19850928  
 EP 1986-112830 19860917  
 US 1986-912461 19860929  
 US 1990-566794 19900813

AB Polymers showing a liq. crystal phase contain laterally bonded mesogenic groups in the polymer backbone. These polymers are useful as substrates in electronics for the fiber- and film techniques, for amplitude and frequency modulation of laser beams, and for optical data recording. 2-(11-Methacryloyloxyundecyl)hydroquinone bis(4-hexyloxyphenyl) ester, prep'd. by esterifying 2-(11-methacryloyloxyundecyl) hydroquinone with 4-hexyloxybenzoyl chloride, was polymd. in C6H6 in the presence of azobisisobutyronitrile to give a polymer showing a stable liq. cryst. phase.

L8 ANSWER 42 OF 70 CA COPYRIGHT 2001 ACS

AN 107:79629 CA

TI Polymeric liquid crystals

IN Shannon, Paul J.

PA Armstrong World Industries, Inc., USA

SO U.S., 10 pp. Cont.-in-part of U.S. Ser. No. 450,089, abandoned.

CODEN: USXXAM

DT Patent

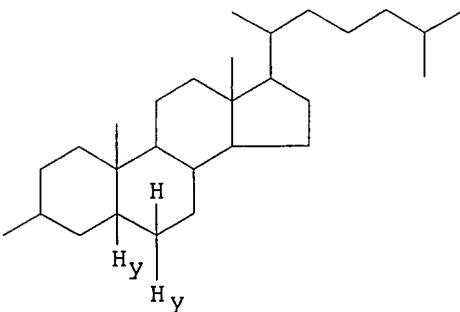
LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4637896	A	19870120	US 1984-660038	19841012
	CA 1214592	A1	19861125	CA 1983-431937	19830706
	JP 59109505	A2	19840625	JP 1983-140666	19830802
	JP 02024297	B4	19900529		
	DE 3340954	A1	19840719	DE 1983-3340954	19831111
	DE 3340954	C2	19860717		
	FR 2537989	A1	19840622	FR 1983-19297	19831202
	FR 2537989	B1	19870605		
	NL 8304277	A	19840702	NL 1983-4277	19831213
	NL 186584	B	19900801		
	NL 186584	C	19910102		
	GB 2132623	A1	19840711	GB 1983-33324	19831214
	GB 2132623	B2	19870610		

PRAI US 1982-450089 19821215

GI



II

AB Coatings having a fixed cholesteric optical response, useful in decorative coatings, comprise photopolymerizable monomers  $\text{CH}_2:\text{CR}_1\text{CO}_2\text{ZCO}_2\text{R}$  [I,  $\text{R}_1 = \text{H}$ ,  $\text{Me}$ ;  $\text{Z} = \text{divalent R}_2$ ,  $\text{R}_{30}$ ,  $\text{R}_{40}$ ;  $\text{R}_2 = [(\text{substituted}) \text{methylene}]3-14$ ;  $\text{R}_3 = [(\text{substituted}) \text{methylene}]2-14$ ;  $\text{R}_4 = \text{C}3-14$  alkylene ether, diether or triether; the terminal alkylene moiety adjacent to carbonate has  $\geq 2$  atoms;  $\text{R} = \text{II}$ ;  $y = 0$  or  $1$ ]. A compn. contg. I ( $\text{R}_1 = \text{Me}$ ,  $y = 0$ ,  $\text{R}_2 = 10$ ) (III) 100, I ( $\text{R}_1 = \text{Me}$ ,  $y = 1$ ,  $\text{R}_2 = 3$ ) (IV) 100, benzophenone 2, IRGACURE 2, trimethylolpropane trimethacrylate 6 parts was sandwiched between clear

polyester film and pressed with a roller to give a texture. The III-IV-trimethylolpropane trimethacrylate copolymer film was orange but was vividly iridescent orange-pink when light was shown on the surface at a low angle.

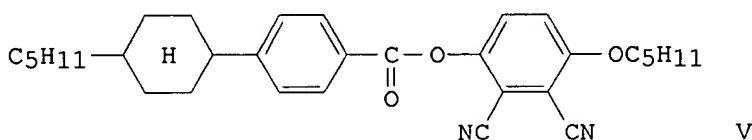
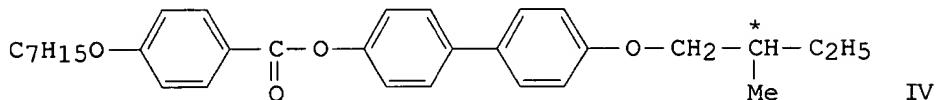
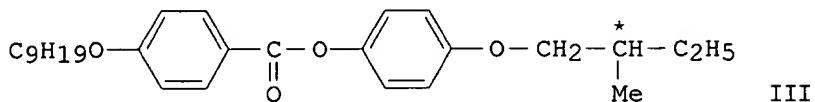
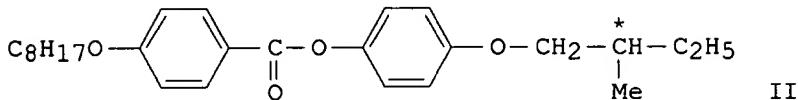
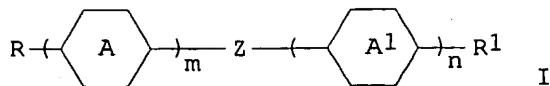
L8 ANSWER 43 OF 70 CA COPYRIGHT 2001 ACS  
AN 106:24049 CA  
TI Thermodynamic studies on solutions of some isomers in aromatic diester liquid crystals by gas-liquid chromatography  
AU Zhou, Xiaoxian; Gong, Hua; Chen, Wufeng; Si, Junfang; Zheng, Guokang  
CS Dep. Chem., Lanzhou Univ., Lanzhou, Peop. Rep. China  
SO Wuli Huaxue Xuebao (1986), 2(5), 385-91  
CODEN: WHXUEU  
DT Journal  
LA Chinese  
AB By using the p-phenylene-di-n-alkoxybenzoate homologous series as a stationary liq., the infinite diln. activity coeffs., partial molar excess enthalpies and entropies of xylene isomers, dichlorobenzene isomers, diPh and diphenylmethane were measured in the nematic phase of 3 liq. crystals (p-alkoxy)benzoates.

L8 ANSWER 44 OF 70 CA COPYRIGHT 2001 ACS  
AN 105:61202 CA  
TI Optical biaxiality of nematic LC-side chain polymers with laterally attached mesogenic groups  
AU Hessel, F.; Finkelmann, H.  
CS Inst. Makromol. Chem., Univ. Freiburg, Freiburg, D-7800, Fed. Rep. Ger.  
SO Polym. Bull. (Berlin) (1986), 15(4), 349-52  
CODEN: POBUDR; ISSN: 0170-0839  
DT Journal  
LA English  
AB Liq. cryst. polymers with mesogenic groups laterally attached to the polymer backbone showed optical biaxial nematic phase behavior as proven by polarizing microscopy when they were macroscopically oriented in a magnetic or elec. field. These polymers confirmed that a hindered rotation around the long axes of the mesogenic moieties changed the uniaxial nematic phase structure to a biaxial one.

L8 ANSWER 45 OF 70 CA COPYRIGHT 2001 ACS  
AN 105:52274 CA  
TI Ferroelectric chiral smectic liquid crystal composition  
IN Furukawa, Kenji; Terashima, Kanetsugu  
PA Chisso Corp., Japan; Hitachi, Ltd.  
SO Eur. Pat. Appl., 54 pp.  
CODEN: EPXXDW  
DT Patent  
LA English  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 178647	A2	19860423	EP 1985-113125	19851016
	EP 178647	A3	19880824		
	EP 178647	B1	19930929		
	R: CH, DE, FR, GB, LI				
	JP 61097382	A2	19860515	JP 1984-219152	19841018
	JP 05079716	B4	19931104		
	JP 61195187	A2	19860829	JP 1985-36003	19850225
	JP 07021143	B4	19950308		
	US 4780241	A	19881025	US 1987-124588	19871124
	US 4931208	A	19900605	US 1988-227912	19880803
PRAI	JP 1984-219152		19841018		
	JP 1985-36003		19850225		
	US 1985-786697		19851011		
	US 1987-124588		19871124		

GI



AB A ferroelec. liq. crystal compn. having a long helical pitch and its use in a quick-response light-switching element are described. This compn. comprises .gtoreq.1 member selected from the group consisting of liq. crystal compds. having a smectic C phase and no helical structure and liq. crystal compds. having a nematic phase and no helical structure and .gtoreq.1 chiral smectic liq. crystal compds. The compn. is used in liq. crystal displays. The compn. is represented by I, in which A and A1 each independently represent a benzene ring or cyclohexane ring; m = 1 or 2, n = 1 or 2; Z is C(O)O, HC:N, CH2O, OC(O), N:CH, OMe or a single bond; R is a C1-18 alkyl group or a C1-18 alkyloxy group; R1 is an alkyl, alkyloxy, alkoxy carbonyl, alkanoyl or an alkanoyloxy group, having an asym. C atom. Thus, 90 wt. parts of a compn. contg. II 40, III 30 and IV 20 wt. parts was mixed with V 10 wt. parts and gave a ferroelec. chiral smectic liq. crystal compn. in which the temp. range of the smectic C phase was 0-65.degree., the spontaneous elec. polarization was 3.8 nC/cm<sup>2</sup> at 30.degree. and the length of the helical pitch was 25 .mu.m. The compn. was placed in a cell which had been coated with a PVA aligning agent and subjected to parallel alignment treatment by rubbing and which had a cell gap of 3 .mu.m. When the liq. crystal cell was inserted between 2 polarizers arranged in a crossed Nicols state and low-frequency a.c. of 0.5 Hz and 15 V was applied, a liq. crystal display element was obtained, with good contrast and 2 ms response time.

L8 ANSWER 46 OF 70 CA COPYRIGHT 2001 ACS

AN 104:236600 CA

TI Analysis of cresol isomers by gas chromatography using liquid-crystal stationary phase

AU Zhang, Liping; Li, Guozhen; Wu, Wannian

CS Anshan Res. Inst. Thermal. Energy, Minist. Metall. Ind., Maanshan, Peop. Rep. China

SO Huaxue Shiji (1986), 8(1), 49-53

CODEN: HUSHDR

DT Journal

LA Chinese

AB p-Benzenediol bis(p-n-octyloxybenzoate) (PBOB) liq. crystal was prep'd. and used as the stationary phase for sepn. of cresol isomers by gas chromatog. H3PO4 (0.5%) was added to the silanized supports, before they were coated

with PBOB (5-10%), to reduce tailing. The results of cresol isomer detn. were compared with those from carbamide method. The chromatog. method is simple, fast, and reproducible. The std. deviation is .1toreq.0.5 and abs. error is .1toreq.1%. The column life is >1 yr. The PBOB column was also used to sep. phenols.

L8 ANSWER 47 OF 70 CA COPYRIGHT 2001 ACS  
AN 104:160000 CA  
TI Thermotropic liquid crystalline compounds with lateral long chain substituents. Part VII. X-ray studies of 1,4-bis(4-octyloxybenzoyloxy)-2-alkylbenzenes  
AU Diele, S.; Roth, K.; Demus, D.  
CS Sekt. Chem., Martin-Luther-Univ. Halle-Wittenberg, Halle/Saale, DDR-4020, Ger. Dem. Rep.  
SO Cryst. Res. Technol. (1986), 21(1), 97-101  
CODEN: CRTEDF; ISSN: 0232-1300  
DT Journal  
LA English  
AB The nematic state of the title system (n = 0, 1, 3, 5, 9, 12, 16) was studied. The results prove the existence of cybotactic groups despite the fact that the branched substances do not show smectogenic properties. A model is proposed for the packing of the mols., which explains the influence of the lengths of the lateral branches on the structure of the cybotactic groups.

L8 ANSWER 48 OF 70 CA COPYRIGHT 2001 ACS  
AN 104:99981 CA  
TI Specific features of the manifestation of thermal effects in liquid crystals  
AU Tinchurina, L. M.; Ovchinnikov, I. V.; Yagfarov, M. Sh.  
CS Kazan. Fiz.-Tekh. Inst., Kazan, USSR  
SO Dokl. Akad. Nauk SSSR (1985), 285(3), 668-71 [Phys. Chem.]  
CODEN: DANKAS; ISSN: 0002-3264  
DT Journal  
LA Russian  
AB The effects were studied of the rate of change of temp., heating, cooling, and thermal storage on the transitions in thermotropic liq. crystals using DSC. The heat of transition is affected by the rate of heating or cooling during its detn. The transition temp. is nearly independent of the rate of heating or cooling. This is explained in terms of the heat capacity and heat storage of the phases and the formation of ordered phases. Similar effects are obsd. in the entropy.

L8 ANSWER 49 OF 70 CA COPYRIGHT 2001 ACS  
AN 104:43653 CA  
TI Thermotropic liquid crystalline compounds with lateral long-chain substituents. (III). Molar volumes, viscosities, optical refractive indexes and order parameters of 1,4-bis[4-n-octyloxybenzoyloxy]-2-n-alkylbenzenes  
AU Demus, D.; Hauser, A.; Isenberg, A.; Pohl, M.; Selbmann, C.; Weissflog, W.; Wieczorek, S.  
CS Sekt. Chem., Martin-Luther-Univ., Halle, DDR-7143, Ger. Dem. Rep.  
SO Cryst. Res. Technol. (1985), 20(10), 1413-21  
CODEN: CRTEDF; ISSN: 0232-1300  
DT Journal  
LA English  
AB For 15 1,4-bis[4-octyloxybenzoyloxy]-2-alkylbenzenes, with alkyl = C<sub>n</sub>H<sub>2n+1</sub> (with n = 0-12), (CH<sub>3</sub>)<sub>3</sub>C-, and C<sub>6</sub>H<sub>13</sub>CO-, densities, thermal expansion coeffs., viscosities, optical refractive indexes, and the order parameters of a dissolved dye were measured in the isotropic and nematic states. The results are briefly discussed.

L8 ANSWER 50 OF 70 CA COPYRIGHT 2001 ACS  
AN 104:43652 CA  
TI Thermotropic liquid crystalline compounds with lateral long-chain substituents. (IV). Physical properties of 1,4-bis[4-n-octyloxybenzoyloxy]-2-n-alkylbenzenes

AU Demus, D.; Diele, S.; Hauser, A.; Latif, I.; Selbmann, C.; Weissflog, W.  
CS Sekt. Chem., Martin-Luther-Univ. Halle-Wittenberg, Halle/Saale, DDR-4020,  
Ger. Dem. Rep.  
SO Cryst. Res. Technol. (1985), 20(11), 1547-58  
CODEN: CRTEDF; ISSN: 0232-1300  
DT Journal  
LA English  
AB For 15 1,4-bis[4-octyloxybenzoyloxy]-2-alkylbenzenes, with alkyl = C<sub>n</sub>H<sub>2n+1</sub>  
(with n = 0-12), (CH<sub>3</sub>)<sub>3</sub>C-, and C<sub>6</sub>H<sub>13</sub>CO-, transition temps., transition  
enthalpies and entropies, densities and phase transition vol., order  
parameters of a dissolved dye, and optical refractive indexes were  
measured. Addnl. miscibility and x-ray investigations were performed.  
The results are discussed on the basis of mol. statistical theories of the  
nematic state and point to a conformation of the long lateral chains which  
is nearly parallel to the mol. long axes. The results further show the  
dominating importance of the steric repulsive forces in stabilizing the  
nematic state.

L8 ANSWER 51 OF 70 CA COPYRIGHT 2001 ACS  
AN 103:131420 CA  
TI Electric birefringence and dipole structure of liquid-crystal phenyl  
benzoate molecules  
AU Ryumtsev, E. I.; Rotinyan, T. A.; Kovshik, A. P.; Agafonov, M. A.  
CS USSR  
SO Opt. Spektrosk. (1985), 59(1), 131-6  
CODEN: OPSPAM; ISSN: 0030-4034  
DT Journal  
LA Russian  
AB A study was made of the electronic structure of mols. of a series of arom.  
esters, distinguished by structure of terminal groups and the formation of  
thermotropic liq. crystal states. The Kerr const. K, dipole moment .mu.  
in solns. and the optical anisotropy were exptl. measured for the detn. of  
direction of the dipole moment. It is exptl. noted that the use of  
samples with regular change of polar structure during the calcn. of their  
group dipole moment can be an effective method of anal. of the dipole  
structure of mols. of liq. crystal substances.

L8 ANSWER 52 OF 70 CA COPYRIGHT 2001 ACS  
AN 102:230266 CA  
TI Dielectric behavior of nematic 2,3,5-substituted 1,4-bis(4-n-  
octyloxybenzoyloxy)benzenes  
AU Kresse, Horst; Worm, Kerstin; Weissflog, Wolfgang  
CS Sekt. Chem., Martin-Luther-Univ. Halle-Wittenberg, Halle/Saale, 4020, Ger.  
Dem. Rep.  
SO Z. Chem. (1985), 25(2), 64-5  
CODEN: ZECEAL; ISSN: 0044-2402  
DT Journal  
LA German  
AB The dielec. anisotropies and dipole moments of the title compds. were  
detd.

L8 ANSWER 53 OF 70 CA COPYRIGHT 2001 ACS  
AN 101:143210 CA  
TI Separation of isomers of dichloro- and dibromobenzene by using liquid  
crystals as the stationary phase in chromatography  
AU Fu, Ruonong; Wu, Wenhui; Tian, Linxiang  
CS Dep. Chem. Eng., Beijing Inst. Technol., Beijing, Peop. Rep. China  
SO Huaxue Shiji (1984), 6(2), 81-5  
CODEN: HUSHDR  
DT Journal  
LA Chinese  
AB The sepn. of isomers of dichloro- and dibromobenzene by gas chromatog. by  
using liq. crystal and conventional stationary phases was studied. The  
liq. crystal (p-tolylene)bis(p-hexoxybenzoate) is suitable for the sepn.  
o-, m-, and p-dichlorobenzene. The liq. crystal 4,4'-  
dimethoxyazoxybenzene is the best liq. phase for sepg. o-, m-, and  
p-dibromobenzene. Of the conventional stationary phases, PEG-20M is

suitable for the sepn. of dichlorobenzene isomers but not suitable for the dibromobenzenes.

L8 ANSWER 54 OF 70 CA COPYRIGHT 2001 ACS

AN 101:60612 CA

TI Selectivity and chemical structure of nematic mesophases in gas chromatography

AU Isenberg, Angelika; Kraus, Guenter; Zaschke, Horst

CS Dep. Chem., Martin-Luther-Univ. Halle-Wittenberg, Halle/Saale, 4020, Ger. Dem. Rep.

SO J. Chromatogr. (1984), 292(1), 67-70

CODEN: JOCRAM; ISSN: 0021-9673

DT Journal

LA English

AB The retention behavior of geometrical isomers and Rohrschneider compds. was measured in the nematic range of liq. cryst. stationary phases having different chem. structures, in order to det. the influence of these structures on the polarity and selectivity of the phases. Lateral substituents in mesogenic mols. cause a change in selectivity. The polarities of these phases are compared with those of conventional stationary phases, and the strong influence of the terminal groups of the liq. crystal mols. on .DELTA.I values is discussed.

L8 ANSWER 55 OF 70 CA COPYRIGHT 2001 ACS

AN 100:202819 CA

TI Special selectivity of the liquid crystal stationary phase. I.

Temperature dependence of the retention index

AU Ge, Hailin; Zhu, Minghua; Shao, Lingxian

CS Dep. Chem., East China Inst. Chem. Technol., Shanghai, Peop. Rep. China

SO Huaxue Xuebao (1984), 42(4), 320-5

CODEN: HHHPA4; ISSN: 0567-7351

DT Journal

LA Chinese

AB The temp. dependence of the retention index  $I = A + B/(T + C)$  is discussed. The value C is only dependent on the properties of the liq. crystal stationary phase. It can be obtained by using least squares for the relation between the logarithm of the  $(VgCn1/VgCn2)$  of 2 n-alkanes Cn1 and Cn2 and reciprocal of temp.:  $\ln(VgCn1/VgCn2) = a + b/T$ ,  $C = b/a$ . The  $I = A + B/(T + C)$  can be transformed into linear function I vs.  $1/(T + C)$  and consts. A and B can be detd. by least squares. Expts. on liq. crystal stationary phases 1,4-phenylene 4-(octyloxy)benzoate and 2-methyl-1,4-phenylene 4-(octyloxy)benzoate proved that the method is desirable. A comparison with the literature was carried out for the squalane stationary phase. The method is simple and precise, and is useful for characterization of the stationary phase, estn. of the retention index, and qual. anal.

L8 ANSWER 56 OF 70 CA COPYRIGHT 2001 ACS

AN 100:165902 CA

TI Thermotropic liquid crystalline compounds with lateral long-chain substituents (II). Synthesis and liquid crystalline properties of 1,4-bis[4-substituted-benzoyloxy]-2-n-alkylbenzenes

AU Weissflog, W.; Demus, D.

CS Betriebsteil Spezialchem., VEB Laborchem. Apolda, Leipzig, DDR-7143, Ger.

Dem. Rep.

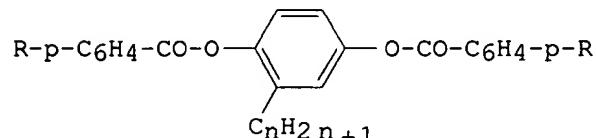
SO Cryst. Res. Technol. (1984), 19(1), 55-69

CODEN: CRTEDF; ISSN: 0232-1300

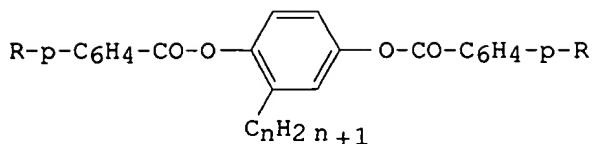
DT Journal

LA English

GI



I



AB There were synthesized 102 derivs of I with R = alkyl, alkyloxy, alkanoyloxy, and alkyloxycarbonyloxy with n = 0-16. All of the compds. are nematic. Thus, lateral long-chain substituents are compatible with liq. cryst. properties.

L8 ANSWER 57 OF 70 CA COPYRIGHT 2001 ACS

AN 98:135648 CA

TI Compounds with lateral long-chain substituents - a new molecule structure concept for thermotropic liquid crystals

AU Weissflog, W.; Demus, D.

CS Betriebsteil Spezialchem., VEB Laborchem. Apolda, Leipzig, DDR-7143, Ger. Dem. Rep.

SO Cryst. Res. Technol. (1983), 18(1), K21-K24

CODEN: CRTEDF; ISSN: 0232-1300

DT Journal

LA English

AB The liq. crystal properties of several homologous series of 1,4-bis[4-alkyloxybenzoyloxy]-2-alkylbenzenes were detd. by substitution of the H in the 2-position with Me, Et, and Pr. This decreases the clearing points. With increasing length of the lateral alkyl group the trend in the decrease becomes less pronounced and tends to a satn. value at about dodecyl. The difference between the clearing points of the analogous members of the 2 series becomes smaller with longer lateral substituents. All the compds. exhibit nematic behavior; there are no smectic phases.

L8 ANSWER 58 OF 70 CA COPYRIGHT 2001 ACS

AN 97:48992 CA

TI Study of aromatic diester liquid crystals as a stationary phase in gas chromatography

AU Xiao, Yuxiang; Li, Guozhen; Yan, Renxuan

CS East China Inst. Chem. Technol., Peop. Rep. China

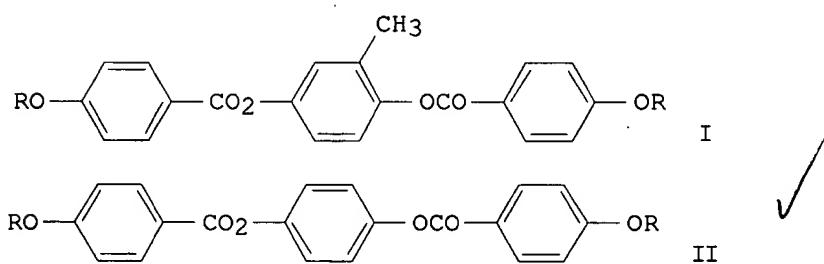
SO Huadong Huagong Xueyuan Xuebao (1981), (3), 33-41

CODEN: HHKPDM

DT Journal

LA Chinese

GI



AB Arom. diester liq. crystals having the general formula I (R = C<sub>6</sub>H<sub>13</sub>, C<sub>7</sub>H<sub>15</sub>, C<sub>8</sub>H<sub>17</sub>) and II (R = C<sub>6</sub>H<sub>13</sub>, C<sub>7</sub>H<sub>15</sub>, C<sub>8</sub>H<sub>17</sub>, C<sub>9</sub>H<sub>19</sub>) and 3 mixts., M-103, M-104, and M-201, were prep'd. and used as the stationary phase in the gas chromatog. sepn. of isomers of arom. compds. with close b.ps. The isomers of divinylbenzene, methylisopropylbenzene, benzenedicarboxylic acid, methylphenol, tert-butylphenol, dimethylbenzene, chlorodiphenyl ether, and chlorobutyldiphenyl ether were successfully sepd. on the arom. diester liq. crystal phases.

L8 ANSWER 59 OF 70 CA COPYRIGHT 2001 ACS

AN 95:125612 CA

TI Study of liquid crystals as stationary phases in gas-liquid chromatography. 2. Improvement of the analysis of isomeric cresols

AU Wu, Wan-Nian; He, Yi-Hua; Zhang, Wen-Juan; Wang, Li-Fen

CS East China Inst. Chem. Technol., Peop. Rep. China

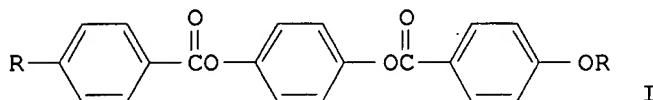
SO Hua-tung Hua Kung Hsueh Yuan Hsueh Pao (1981), (1), 105-14

CODEN: HHKPDM

DT Journal

LA Chinese

GI



AB The liq. crystals (I, R = C<sub>6</sub>H<sub>13</sub>, C<sub>7</sub>H<sub>15</sub>, C<sub>8</sub>H<sub>17</sub>, C<sub>9</sub>H<sub>19</sub>, C<sub>10</sub>H<sub>21</sub>) were used as stationary phases in the gas chromatog. sepn. of cresol isomers. A gas chromatog. column packed with H<sub>3</sub>PO<sub>4</sub>-treated Chromosorb W-HP coated with I (R = C<sub>8</sub>H<sub>17</sub>) was used to sep. successfully o-cresol, m-cresol, m-cresol, and p-cresol at a column temp. of 103.degree., a pressure of 1.5 kg/cm<sup>2</sup>, N flow rate 19 mL/min, H flow rate 48 mL/min, and air flow rate 640 mL/min. The use of the liq. crystal I greatly reduced the anal. time and improved the stability of the chromatog. column.

L8 ANSWER 60 OF 70 CA COPYRIGHT 2001 ACS

AN 95:34901 CA

TI Studies of liquid crystals as stationary phases in gas-liquid chromatography. I. Chromatographic separation of toluic acid isomers on kieselguhr-lined glass capillary column coated with nematic liquid crystal

AU Chen, Yao-Zu; Ma, Xue-Yi; Wu, Line-You

CS Dep. Chem., Lanzhou Univ., Lanzhou, Peop. Rep. China

SO Kao Teng Hsueh Hsiao Hua Hsueh Hsueh Pao (1981), 2(2), 163-8

CODEN: KTHPDM

DT Journal

LA Chinese

GI For diagram(s), see printed CA Issue.

AB A rapid and effective gas chromatog. sepn. of isomeric toluic acid (Me esters) on glass capillary column coated with nematic liq. crystal (I) (R = hexyl, heptyl, or octyl; R' = H or Me) on kieselguhr was developed. All five nematic liq. crystals tried gave better sepn. of the meta and para isomer than 1,2,3,4-tetracyanoethoxybutane liq. phase. The dependence of the column efficiency and the partition ratio on the linear velocity of the carrier gas and the column temp. was examd.

L8 ANSWER 61 OF 70 CA COPYRIGHT 2001 ACS

AN 94:149712 CA

TI Study of liquid crystal as gas chromatographic stationary phases. Part 1. The separation of isomeric cresols

AU Wu, Wan-Nien

CS Cent. Anal. Lab., Shanghai Inst. Chem. Technol., Shanghai, Peop. R. China

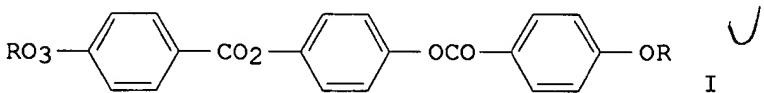
SO Shanghai Hua Kung Hsueh Yuan Hsueh Pao (1979), (1-2), 115-27

CODEN: SHKPD7

DT Journal

LA Chinese

GI



AB Alkoxyphenylcarbonyloxyphenyl alkoxybenzoates (I, R = C<sub>6</sub>H<sub>13</sub> (II); R = C<sub>7</sub>H<sub>15</sub> (III); R = C<sub>8</sub>H<sub>17</sub> (IV)), on silica gel were used as the stationary phases in chromatog. sepn. of cresol isomers. The exptl. results indicated that the sepn. efficiency by the liq. crystals was in the order of IV > III > II. Even after 3 yr intermittent use, the liq crystal-contg. columns showed no visible deterioration.

L8 ANSWER 62 OF 70 CA COPYRIGHT 2001 ACS

AN 94:56138 CA

TI Liquid crystals. VII. Smectic-nematic transition temperature as a function of alkyl end group length in p-phenylene di-p-n-alkoxybenzoates

AU Schroeder, J. P.

CS Dep. Chem., Univ. North Carolina, Greensboro, NC, 27412, USA

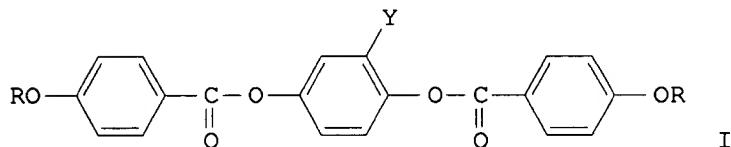
SO Mol. Cryst. Liq. Cryst. (1980), 61(3-4), 229-40

CODEN: MCLCA5; ISSN: 0026-8941

DT Journal

LA English.

GI



AB The smectic-nematic transition temps. of the C<sub>1</sub>-C<sub>12</sub> homologs of some p-phenylene di-p-n-alkoxybenzoates (I) were studied. For three homologous series of these esters (unsubstituted, Me<sub>2</sub>-substituted, and chlorosubstituted on the central phenylene ring), the transition temp. was found to decrease at first on ascending the series, pass through a min. at the C<sub>4</sub> homolog, and then increase regularly. Intermol. attraction in the nematic and smectic mesophases and mol. order in the nematic mesophase increase modestly with increasing alkyl chain length, but mol. order in the smectic mesophase rises sharply on going from the C<sub>1</sub> to the C<sub>4</sub> homolog and then much more gradually. This would result in a large increase of  $\Delta S$  transition relative to  $\Delta H$  transition on first ascending the series and, therefore, a drop in the transition temps.  $T = \Delta H / \Delta S$ . From the C<sub>4</sub> to the C<sub>12</sub> homolog,  $\Delta H$  apparently increases faster than  $\Delta S$  and  $T$  rises.

L8 ANSWER 63 OF 70 CA COPYRIGHT 2001 ACS

AN 91:45096 CA

TI Deviation from ideality of binary smectic solutions

AU Domon, M.; Billard, J.

CS Lab. Dyn. Crist. Mol., Univ. Sci. Tech. Lille, Villeneuve d'Ascq, 59650, Fr.

SO J. Phys., Colloq. (Orsay, Fr.) (1979), (3), 413-18

CODEN: JPQCAK; ISSN: 0449-1947

DT Journal

LA French

AB Iosbaric phase diagrams was obsd. by means of the contact method. They show that smectic phases of binary mixts. can exhibit a nonideal behavior. The existence of a strong terminal dipole for only one of the components is not always due to this non-ideality.

L8 ANSWER 64 OF 70 CA COPYRIGHT 2001 ACS

AN 89:121088 CA

TI Molecular structure and dielectric anisotropy of some liquid crystals

AU Rotinyan, T. A.; Rout, Kh. K.; Kovshik, A. P.; Adomenas, P. V.; Daugvila, Yu. Yu.; Ryumtsev, E. I.

CS Leningr. Gos. Univ., Leningrad, USSR

SO Kristallografiya (1978), 23(3), 578-82

CODEN: KRISAJ; ISSN: 0023-4761

DT Journal  
LA Russian  
GI For diagram(s), see printed CA Issue.  
AB The effect of polar substituents in mols. of hydroquinone bis(4-n-alkoxybenzoates) (I) on the electrooptical properties of their solns. and liq.-crystal phases was studied. The magnitudes and directions of the mol. dipole moments of I were detd. The mol. structure dets. the dielec. anisotropy of the nematic phase. The polar substituents were H, Cl, CN, and NO<sub>2</sub>.

L8 ANSWER 65 OF 70 CA COPYRIGHT 2001 ACS

AN 87:32188 CA  
TI Stabilization of cholesteric liquid crystals  
AU Chistyakov, I. G.; Gorina, I. I.; Rubtsova, M. Yu.  
CS Inst. Kristallogr., Moscow, USSR  
SO Kristallografiya (1977), 22(2), 334-8

CODEN: KRISAJ

DT Journal

LA Russian

AB The effect of various stabilizers on the aging of multicomponent cholesteric mixts. was investigated. Aging results were evaluated according to induction period of oxidn., change in the temp. of selective reflection, and clarification temp. A stabilizer-antioxidant was found that was effective for use in cholesteric liq. crystals under various conditions.

L8 ANSWER 66 OF 70 CA COPYRIGHT 2001 ACS

AN 83:20096 CA  
TI Dielectric properties of several liquid crystalline esters  
AU Van Meter, J. P.; Klingbiel, R. T.; Genova, D. J.  
CS Res. Lab., Eastman Kodak Co., Rochester, N. Y., USA  
SO Solid State Commun. (1975), 16(3), 315-18

CODEN: SS COA4

DT Journal

LA English

AB A dielec. study has indicated that the inherent dielec. anisotropy (measured at 10 kHz) for the liq. crystals derived from hydroquinone or terephthalic acid is neg. whereas it is pos. for the phenyl benzoyloxybenzoate system. The dielec. anisotropy of these systems can be changed by appropriate structural modifications; for example, liq. crystals with neg. dielec. anisotropies can be obtained by the incorporation of a cyano group in a lateral position or a cyanomethoxy group in a para position of the mol.

L8 ANSWER 67 OF 70 CA COPYRIGHT 2001 ACS

AN 79:97891 CA  
TI Liquid crystals. IV. Effects of terminal substituents on the nematic mesomorphism of p-phenylene dibenzoates  
AU Schroeder, J. P.; Bristol, D. W.  
CS Dep. Chem., Univ. North Carolina, Greensboro, N. C., USA  
SO J. Org. Chem. (1973), 38(18), 3160-4

CODEN: JOCEAH

DT Journal

LA English

AB New p-phenylene dibenzoates with various end groups were prep'd. and their phase transition temps. detd. The data for these compds. and for other terminally substituted p-phenylene dibenzoates described in the literature were then examd. for trends in nematic liq. cryst. behavior. Only 7 of the 63 esters do not exhibit a nematic mesophase. The marked tendency of this mol. system to be nematic is further shown by the mesomorphism of 3 esters having only 1 terminal substituent. Of the end groups for which data are available, long-chain alkoxy groups are most effective at lowering the m.p.; CN, NO<sub>2</sub>, CO<sub>2</sub>Me, and Br are most effective at raising it. The highest nematic-isotropic transition temps. are produced by CN, CO<sub>2</sub>Me, MeO and CO<sub>2</sub>Et and the lowest by COO-n-Bu, iso-Pr, cyclohexyloxy, and iso-BuO. Unsym. di-n-alkoxy esters are the lowest melting p-phenylene dibenzoates and have the broadest nematic temp. ranges. An attempt is

made to rationalize the data, and analogies with other nematic mol. systems are discussed. In the course of the investigation, new para-substituted benzoic acids and p-hydroxyphenyl benzoates were also synthesized.

L8 ANSWER 68 OF 70 CA COPYRIGHT 2001 ACS  
AN 74:16738 CA  
TI Molecular structure and liquid crystallinity. Phenylene bis(alkoxybenzoates)  
AU Fergason, James L.; Arora, Sardari L.; Taylor, Ted R.  
CS Liquid Cryst. Inst., Kent State Univ., Kent, Ohio, USA  
SO J. Org. Chem. (1971), 36(1), G  
CODEN: JOCEAH  
DT Journal  
LA English  
AB A no. of 1,4-phenylene bis(4'-alkoxybenzoates) have been synthesized to study the effects of the central carboxyl groups on the formation of smectic phases and the thermal stability of the liq.-crystal phases. A parallel series with the Me substituent at the 2 position of the 1,4-phenylene ring has also been prep'd. to investigate the effect of a lateral substituent on the mesomorphic properties. In addn. to the nematic phase shown by these compds., many of them also exhibit a smectic phase which is identical with smectic C. Many derivs. of the 2-methyl-1,4-phenylene series have lower m.ps. and higher nematic-isotropic transition temps. than are commonly encountered in liq.-crystal compds.

L8 ANSWER 69 OF 70 CA COPYRIGHT 2001 ACS  
AN 73:66215 CA  
TI Effects of central and terminal groups on nematic mesophase stability  
AU Dewar, Michael J. S.; Goldberg, Ronald S.  
CS Dep. of Chem., Univ. of Texas, Austin, Tex., USA  
SO J. Org. Chem. (1970), 35(8), 2711-15  
CODEN: JOCEAH  
DT Journal  
LA English  
AB Sixteen liq. cryst. p-phenylene esters of hydroquinone and p-substituted phenyl esters of terephthalic acid were synthesized. Most of them exhibit very broad nematic ranges and high transition temps. The effects of structural changes on mesophase stability are also discussed.

L8 ANSWER 70 OF 70 CA COPYRIGHT 2001 ACS  
AN 72:104981 CA  
TI Role of p-phenylene groups in nematic liquid crystals  
AU Dewar, Michael J. S.; Goldberg, Ronald S.  
CS Dep. of Chem., Univ. of Texas, Austin, Tex., USA  
SO J. Amer. Chem. Soc. (1970), 92(6), 1582-6  
CODEN: JACSAT  
DT Journal  
LA English  
AB Many compds. forming nematic mesophases contain p-phenylene units. These perform a dual function, providing rigid linear groupings and contributing to the polarizability of the mol. These conclusions are based on a comparison with compds. where benzene rings are replaced by cyclohexane or bicyclo[2.2.2]octane.

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